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ABSTRACT

This Environmental Education Teacher's Guide, developed for use at the K-6 level, is designed to familiarize teachers with how an environmental education program can help in their teaching and in achieving the goals of the school. This program focuses on developing attitudes towards study environments and associated environmental problems. The study environments have been selected to provide a means of expanding the scope and complexity of understandings. At the kindergarten/grade one level, the school environment is emphasized; grades two and three, the neighborhood; grades four and five, the community; and grade six, the region. The guide is divided into three sections. Section I, The Big Ideas, contains major concepts and attitudes, teaching roles and student skills, process teaching examples, and general concept emphasis. Section II, Examples of Activities and Pre-Post Tests, contains core experiences, concepts, and pre- and post-tests for kindergarten through grade six. Section III, Other Useful Information, includes information on planning and conducting field trips, environmental evaluation and identification of improvement opportunities, evaluation of the Man-Made Environment and environmental problem-solving and improvement activities. (BT)

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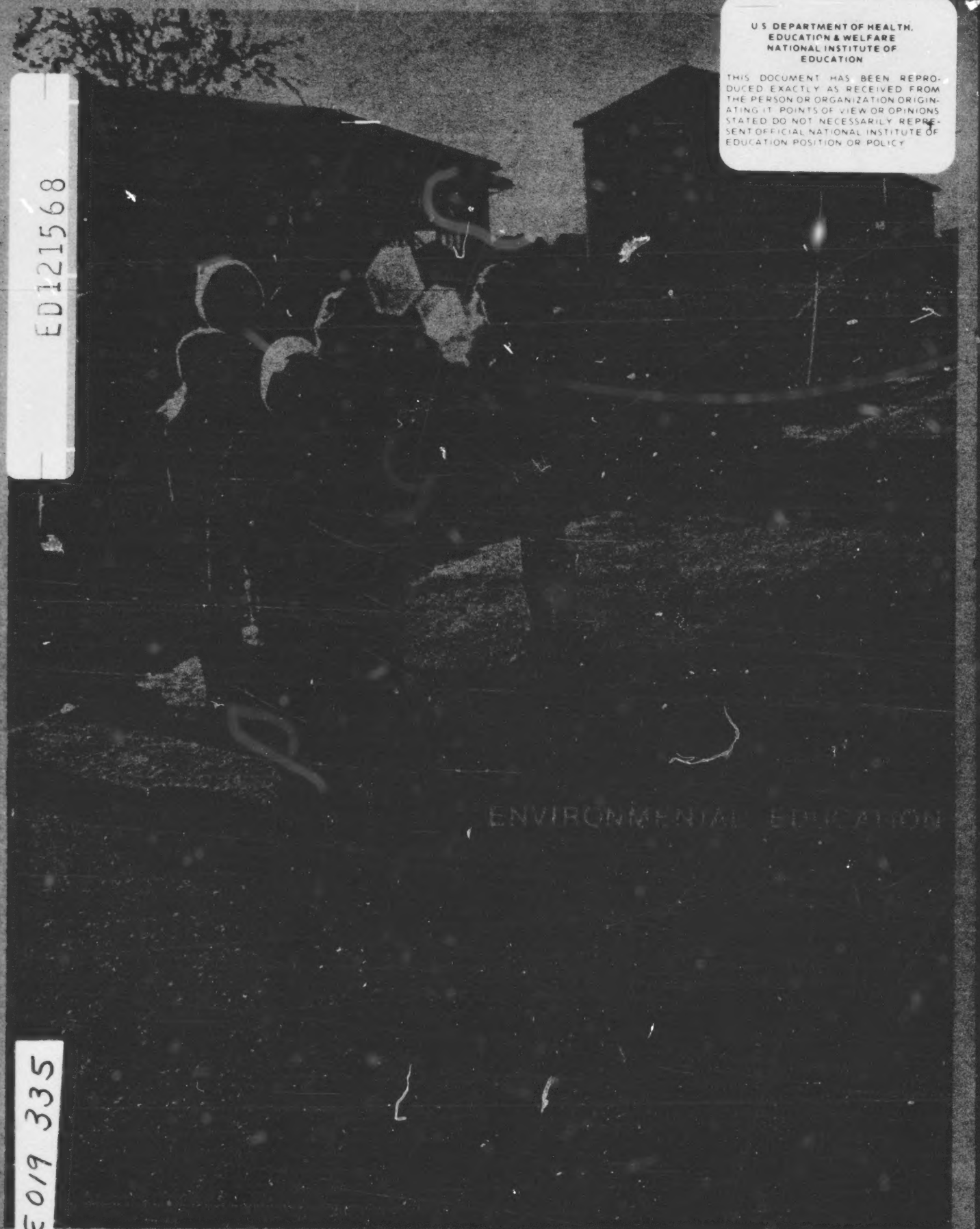

SE019 335

COMPOSITE

K - 6

ENVIRONMENTAL EDUCATION TEACHER'S GUIDE

Prepared by:

Dean B. Bennett

Wesley H. Willink

The Maine Environmental Education Project's
National Developer/Demonstration Program
E.S.E.A., Title III, 306

1975

Yarmouth, Maine School Department

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*Special credit given to the Resources for the Future, Inc. and Nan J. Lindey for the line drawings.

To the Teacher:

This guide is designed to familiarize you specifically with how an environmental education program can help you in your instruction and in achieving the goals of the school.

Environmental education aims at developing strong attitudes of concern for the quality of the natural and human environment and its role in meeting our needs - - attitudes which will lead to action to help prevent and resolve environmental problems.

At the K-6 level, this program focuses on developing attitudes towards study environments and associated environmental problems. The study environments have been selected to provide a means of expanding the scope and complexity of understandings. At the kindergarten/grade one level, the school environment is emphasized; grades two and three, the neighborhood; grades four and five, the community; and grade six, the region. It is important to note that although one study environment is emphasized at each grade level, it will also be viewed from the perspective of how it relates to the other study environments.

During the program the learner will be guided in the development of feelings, understandings, and skills related to the environment and its associated problems.

TABLE OF CONTENTS

To the Teacher ii

SECTION I

MAJOR CONCEPTS:

The Natural Ecosystem I-3

The Human Systems I-5

MAJOR ATTITUDES I-10

MAJOR TEACHER ROLES & STUDENT SKILLS:

Teaching for Discovery I-16

Teaching for Evaluation I-17

Teaching for Problem-Solving I-18

Teaching for Controversial Issues I-20

Student Skills I-21

PROCESS TEACHING EXAMPLES:

Natural Environment I-22

Man-Made Environment I-23

SUGGESTED CONSIDERATIONS for the ELEMENTARY LEVEL . . I-24

GENERAL CONCEPT EMPHASIS I-25

SECTION II

Environmental Education Core Experiences II-1

KINDERGARTEN

Study Environment: The School
Concepts for Kindergarten
Four Kindergarten Core Experiences
Pre-Post Test

GRADE ONE

Study Environment: The School
Concepts for Grade One
Four Grade One Core Experiences
Pre-Post Test

GRADE TWO

Study Environment: The Neighborhood
Concepts for Grade Two
Four Grade Two Core Experiences
Pre-Post Test

GRADE THREE

Study Environment: The Neighborhood
Concepts for Grade Three
Four Grade Three Core Experiences
Pre-Post Test

GRADE FOUR

Study Environment: The Community
Concepts for Grade Four
Four Grade Four Core Experiences
Pre-Post Test

GRADE FIVE

Study Environment: The Community
Concepts for Grade Five
Four Grade Five Core Experiences
Pre-Post Test

GRADE SIX

Study Environment: The Region
Concepts for Grade Six
Four Grade Six Core Experiences
Pre-Post Test

SECTION III

General Considerations for the Grade Level Field Trip. III-1

Taking Successful Field Trips III-3

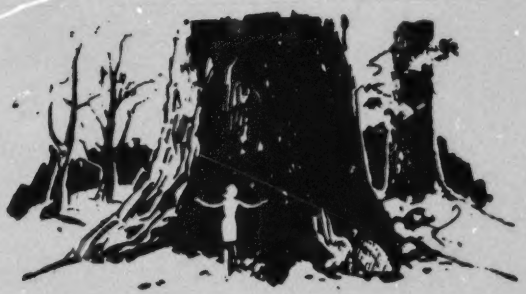
Environmental Evaluation and Identification of Improvement Opportunities III-8

Evaluation of the Man-Made Environment III-11

Environmental Problem-Solving and Improvement Activities III-13

SECTION I

THE BIG IDEAS



THE BIG IDEAS

IN ENVIRONMENTAL EDUCATION

CONCEPTS

Concepts are abstract patterns derived from the inter-relationships of concrete facts. For example, trout eat mayflies is a fact; the food web of that pond is a concept. We believe that Environmental Education should aim to develop concepts in order that students be better able to understand the meaning of facts.

ATTITUDES

Attitudes are inclinations to view a concrete or an abstract object in terms of like or dislike, good or bad, right or wrong, etc. Attitudes are thought to consist of three essential parts or components. Two of these are feelings and understandings. If a student feels strongly enough toward the environment and its problems and possesses a sufficient amount of accurate information about it and how he can help resolve problems, his attitude may then contain a third component - a tendency or motivation to act.

It is believed that clusters of similar attitudes form a value.

SKILLS & TEACHER ROLES

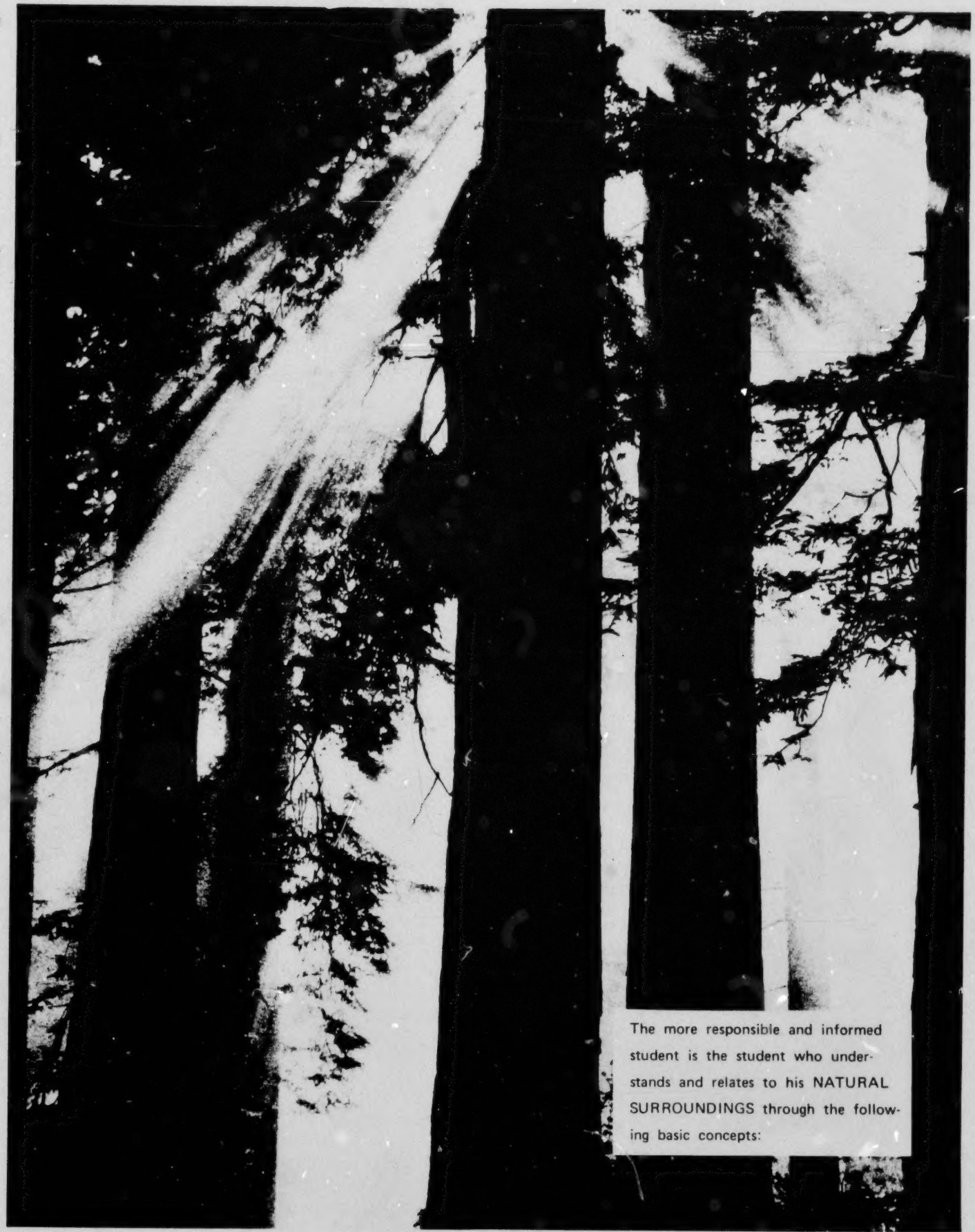
The important skills in Environmental Education are those physical actions necessary to successfully carry out the process of discovery and investigation, evaluation and problem identification and problem solving.

The act of practicing these skills serves not only to allow a person to act on his values but also to contribute to a better quality environment.

THE MAJOR CONCEPTS

The major concepts identified in this section are general in nature and help the student to acquire a broad perspective of the functioning of the total environment. They do not represent new concepts. Instead, they are a synthesis and re-organization of concepts which in most cases have been identified and are being taught in the separate disciplines. As such, they show teachers where they can "plug in" the individual facts and concepts they teach in order to organize them into a broader framework which is sensitive to the needs of today. To assist teachers in this, more specific concepts derived from the major concepts have been identified at each grade level.

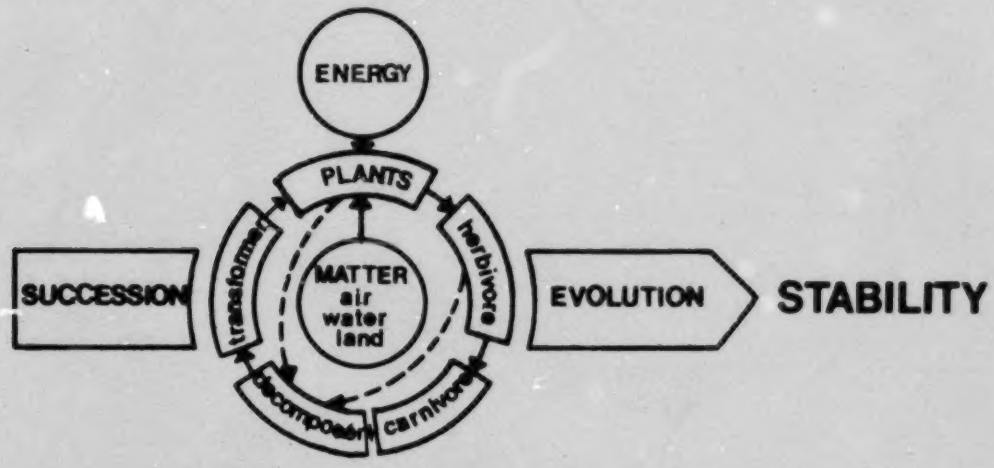
Since Environmental Education should not be a separate subject area, but rather, an emphasis and a way of teaching, no detailed conceptual scheme is presented in this Teacher's Guide.



The more responsible and informed student is the student who understands and relates to his NATURAL SURROUNDINGS through the following basic concepts:

CONCEPT 1

- The earth is a closed and finite system which functions as illustrated below:



CONCEPT 2

- Each living and each non-living component of the environment has its own unique characteristics, its own unique relationships with other components, and its own pattern of change.

CONCEPT 3

- The ability of a natural system to survive in a healthy state depends upon the amount of stability which it possesses. Stability depends upon:
  - a large number of different kinds of species present.
  - the kind and amount of food and matter present for consumption.
  - a large number of niches (roles) and habitats (places to live) for the species present.
  - the maximum cycling and recycling of matter.
  - the proper number of individuals present in the system.
  - the efficient use of energy.

To fully appreciate why man changes his natural surroundings, how he does this, and the results of these activities of human culture the student should understand and relate to the following basic concepts regarding the MAN-MADE ENVIRONMENT:

CONCEPT 4

■ Man has physical, psychological, and social needs which must be met by his physical surroundings.

Physical needs include an environment which is:

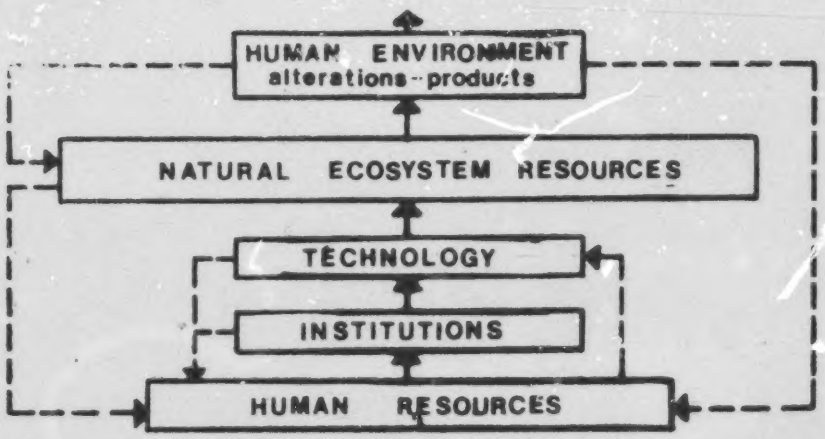
- useful and contains useful objects
- characterized by efficient objects
- safe and healthy
- lasting and has durable components

Psychological needs from our surroundings include:

- harmony
- stability and landmarks
- privacy
- variety
- areas for play and expression of aggression
- areas where one can learn
- personalized objects
- areas and things pleasant to look at and to be in

Social needs from our environment include:

- places to gather and meet
- places to compete and challenge the elements
- places where one can express himself to others through speaking or the creation and display of objects

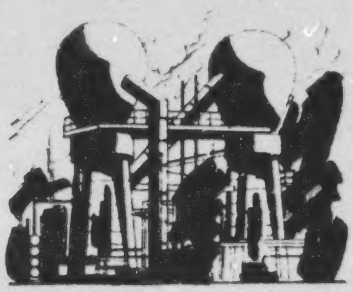


CONCEPT 5

It is ultimately the Natural Environment which must be utilized to meet these human needs and assorted human wants. To do this, man works through the institutional and technological systems upon the raw and refined resources. The results are the products and alterations characteristic of the Human Environment. The process and components of man/nature interactions are illustrated above.

CONCEPT 6

- The developed Human Environment and its products determine the extent to which the individual's needs and wants are met. Closer examination shows this Human Environment to consist of these general types of uses:



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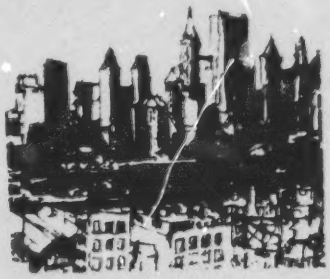
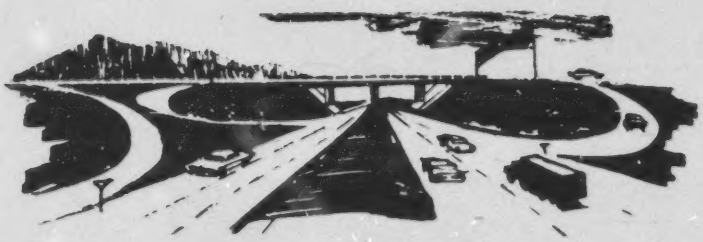


HUMAN SETTLEMENTS



TRANSPORTATION/CIRCULATION

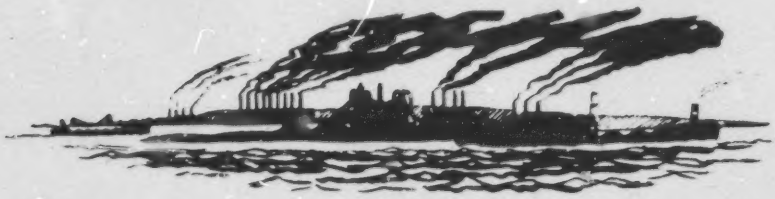
RECREATION

COMMUNITY SERVICES & UTILITIES

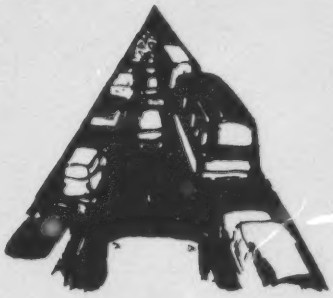
OPEN SPACE

CONCEPT 7

- However, this alteration of the Natural Environment to meet human needs and wants has a cost because the process is not totally efficient. Some of the more common spin-offs and undesirable side-effects are:



POLLUTION



CROWDING

WASTE

BLIGHT

SUMMARY:

Understanding these basic concepts of natural law, human intervention, and the results, both good and bad, of this intervention constitutes the factual basis of Environmental Education and lays the groundwork for personal value clarification and student activities.

THE MAJOR ATTITUDES

The major attitudes identified in this section are those feelings which contribute to the formation of values that motivate and guide rational action.

Studies have shown that simply knowing the preceding concepts and facts alone does not imply that the student will have a greater appreciation and motivation or will have a tendency to work as an individual toward creating better quality surroundings.

To have this occur, the student must have coupled with the concepts and supportive facts the following feelings:

FEELING 1

■ A HEALTHY SELF-IMAGE

FEELING 2

■ A SENSE OF SOCIAL RESPONSIBILITY

FEELING 3

■ A SENSITIVITY TO THE ENVIRONMENT

FEELING 4

■ AN APPRECIATION OF LEARNING

I - 12

The importance of both knowledge and feelings in determining the behavior exhibitied might be illustrated by the following:

Much Knowledge + Little Positive Feeling =
APATHETIC BEHAVIOR

Little Knowledge + High Positive Feeling =
EMOTIONAL BEHAVIOR

Much Knowledge + High Positive Feeling =
INTELLIGENT/EFFECTIVE
BEHAVIOR

No Knowledge + No Positive Feelings =
ALIVE?

". . . only teachers who themselves are concerned about their environmental community will develop similar behavior in their students." *

* "What Kind of Environment Will Our Children Have?" published by the American Association of Colleges for Teacher Education, 1971.

THE MAJOR TEACHER ROLES AND STUDENT SKILLS

The major teacher roles identified in this section are aimed at helping the students develop the skills necessary for them to act on their knowledge and feelings.

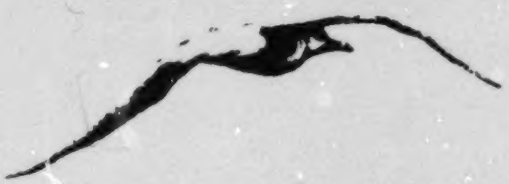
Environmental Education presents to the teacher the opportunity to become an effective educator in the following three ways:

TEACHER ROLES

ROLE ONE

The FIRST ROLE of the teacher becomes one of helping students to DISCOVER their own environment. A teacher should set aside a part of the school year to go out into the community and on a first-hand basis learn about NATURAL ENVIRONMENTAL FEATURES such as:

- Geology
- Estuaries
- Floodplains
- Mammals
- Etc.



Investigations in the community which shed light on WHY the environment is changing relate to the human population and its characteristics such as:

- Migration patterns
- Government boundaries
- Housing
- Land ownership
- Historic Development
- Etc.

Investigations which show WHAT has happened to the natural ecosystem when man applies his culture can be found in Human Environmental Use Areas such as:

- Commercial locations
- Playgrounds
- Sewage treatment plants
- Energy production sites
- Industrial sites
- Public water supply
- Etc.

These investigations are rich additions in the existing curriculum and a complement to the standardized materials which cannot relate to each student's locale and situation. Environmental education must be indigenous education if it is to truly captivate the students interest and create motivation.

ROLE TWO

The SECOND ROLE of the teacher is to assist the students in <u>EVALUATING</u> the facts and information gathered in community-based research.

Students hear many conflicting ideas, theories and explanations about how the natural environment should be developed or preserved and how one human use in an area is more important than another. When investigating the local environment such feelings and attitudes are sure to arise. This cannot be avoided. But, there is a way to handle this.

All students should have opportunities to clarify and crystallize their own values. The teacher's role becomes one of:

- helping them to understand basic human and natural environmental needs, and
- assisting them to develop in their own minds the criteria by which to define quality surroundings.

It is important that balanced attitudes and values be encouraged. Tunnel vision, ill-founded prejudices, and obviously blatant disregarding of the facts should be discouraged.

The development of "mental yardsticks" by which to measure the quality of the environment results in the student's ability to identify opportunities for environmental maintenance and improvement. Without this ability to detect poor quality or to identify good quality in the environment based on carefully searched personal values, no person will consistently act and speak for the type of surroundings which he feels are needed.

ROLE THREE

A THIRD ROLE occurs for the teacher when the information generated and the values and attitudes explored lead to a high motivation on the part of the students to become actively involved. The teacher then can assist to facilitate PROBLEM SOLVING.

These problem-solving activities, properly managed by the teacher, can have significant returns in the form of increased understanding of concepts, acquisition of critical thinking, skills and clarification of attitudes and values.

There are many, many opportunities for problem-solving related to the student's environment. Problem-solving activities may take the form of:

1. Preventing something detrimental from occurring.
2. Correcting an existing detrimental condition.
3. Adding something which will enhance the function and quality of the environment.

In addition, the students may help resolve a selected problem or issue at one or two levels of involvement depending on the nature of the problem:

1. Communicating a suggested solution to others who might be in a better position to carry it out or whose support is needed. For example, giving a presentation, writing a letter, developing displays.
2. Actively carrying out a solution. For example, planting trees, monitoring an area to detect undesirable changes, developing a creative playground, etc.

Specific educational activities may be developed by both the students and teacher for each of the problem-solving steps listed below:

PROBLEM-SOLVING STEP	STUDENT/TEACHER ACTIVITIES	RESOURCE AIDS, ETC. NEEDED
1. Selecting a problem to resolve or improvement project to carry out.		
2. Inquring to become informed about the problem through investigation.		
3. Determining alternative solutions to the problem.		
4. Choosing the best solution after considering the consequences of each.		
5. Developing a plan of action.		
6. Implementing the plan of action.		
7. Evaluating the process and results.		

It is felt by many educators that the most educationally profitable step in the process above is number four - CHOOSING THE BEST SOLUTION AFTER CONSIDERING THE CONSEQUENCES OF EACH. This requires the exercising and development of thinking skills. In addition, choosing from alternatives is a process which helps the student clarify his feelings or values and opens up opportunities for a discussion of values. The clarification of values is seen as essential to helping people become consistent in their actions.

NOTE: Often issues and problems which students encounter have elements which may be controversial. The following guidelines for handling controversial issues are taken from the publication ENVIRONMENTAL EDUCATION PROGRAM, Toledo Public Schools, 1971, Compiled by William B. Stapp.

The classroom is the teacher's domain and it is imperative that the teacher use sound judgment and common sense in handling controversial issues. The following are guidelines to be considered in handling controversial issues in the classroom:

1. The classroom teacher must be aware of and take into account the (Regulations) of the Board of Education.

2. Encourage students to investigate environmental problems, but be cognizant and aware of their ramifications.

3. The teacher should know the times, the student body, and its cultural or sub-cultural make-up as they pertain to the issues at hand.

4. The teacher should assist pupils as a resource person to enable them to form intelligent and logical decisions.

5. The teacher should assist pupils in identifying the problems, collecting information, identifying alternative solutions, evaluating solutions, developing a plan of action, and working toward solutions.

6. The teacher shouldn't let personal feelings or prejudices be brought to bear upon the class. The students must be free to express themselves. However, upon request, it may be appropriate to make known views and rationale toward the end of the discussion period. The teacher should view his role as a resource person to assist students in seeking and clarifying different points of view.

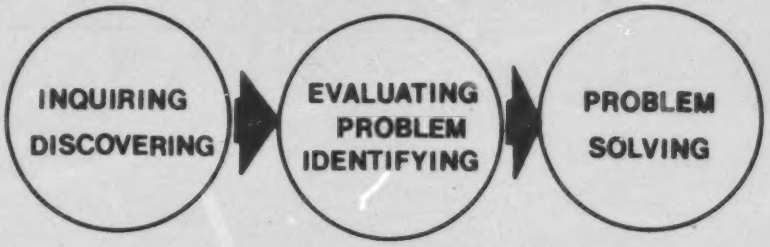
7. Strong emphasis should be placed upon the fact that a student may or may not agree with another's point of view but should respect that person's right to it.

8. Emphasize to the students the importance of considering all aspects of the argument before making decisions.

9. The teacher should strive to bring in several divergent views, references or resource persons.

10. The teacher should be sure that the issue is meaningful for the age group dealing with it.

Teachers who carry out these three roles of investigation, evaluation, and problem-solving have followed the process of Environmental Education as illustrated below:



The result of those environmental education experiences in which the teacher plays all three guiding roles and the students become personally and actively involved at all phases is the strengthening of the following skills:

STUDENT SKILLS

1. Discovery/Inquiry related skills:
   a. Finding out what to investigate
   b. Gathering information on community environmental topics
   c. Compiling, recording, and reporting collected information

2. Evaluation/Problem Identification related skills:
   a. Formulating evaluative questions to use in judging the environment
   b. Finding answers to evaluative questions and comparing existing conditions to standards of quality

3. Problem-Solving related skills:
   a. Selecting a problem to resolve
   b. Inquiring to become informed about the problem
   c. Determining alternative solutions to the problem
   d. Making a decision (choosing) on the best solution after considering the consequences of each alternative
   e. Developing a plan of action to help resolve the problem
   f. Implementing the plan of action
   g. Evaluating the process and results

The next pages suggest a topic, format, and sequence for guiding two different types of Environmental Education experiences.

THE PROCESS OF ENVIRONMENTAL EDUCATION

Natural Environment Example: Trees (plants)

Discovery - Inquiry	Evaluation - Problem Identification	Problem Solving
Classroom activities - Learn about the characteristics, interrelationships, changes, and uses of trees through lessons, books and publications, resource people, films, and other instructional aids.	Group or independent development of criteria to assess: 1) how well trees meet ecological needs, e.g., hold soil, prevent erosion, provide homes for wildlife, etc., and 2) how well trees meet human needs, e.g., physical needs, shade, etc.; social needs,, gathering places,; psychological needs, aesthetics, etc. Evaluate how well trees meet these needs in a real or hypothetical situation to identify environmental improvement opportunities.	Select a hypothetical problem, e.g., landscape a small park with trees. 1. Investigate the problem - needs, kinds of trees, etc. 2. Develop alternative solutions, plans for different plantings in a variety of locations. 3. Choose a solution after considering effects of each. 4. Develop plan of action - list steps and items needed. 5. Present plan for evaluation by others.
On-site activities - Investigate the trees on the school site and map and describe the kinds present on the site, their locations. sizes, condition, environmental effects, etc.	Develop evaluative criteria as above and assess extent present trees on the school site meet criteria. Identify: 1) existing conditions which need to be corrected - diseased trees, storm damaged trees, etc., 2) conditions which could be enhanced by planting trees, and 3) conditions threatening trees which should be prevented.	Select a tree problem to resolve on the school site; for example, white pine blister rust, etc. 1. Investigate causes, effects. 2. Develop alternative solutions. 3. Choose a solution. 4. Develop a plan of action. 5. Carry out plan. 6. Evaluate results.

THE PROCESS OF ENVIRONMENTAL EDUCATION

Man-Made Environment Example:

Walkways and Pathways (transportation-circulation areas)

Discovery - Inquiry	Evaluation - Problem Identification	Problem Solving
Classroom activities - Learn about the kinds, locations, functions, and characteristics of walkways and pathways through lessons, books and publications, resource people, films, and other instructional aids. On-site activities - Investigate walkways and pathways on the school site or in the community. Map and describe the kinds, locations, characteristics, conditions, and human and environmental effects.	Individual and group development of criteria to assess: 1) effects of walkways and pathways on the natural ecosystem - altering drainage patterns, changing microclimate, removing vegetation, etc., and 2) how well walkways and pathways meet human needs: physical - safety, etc., psychological - aesthetics, etc., and social - bringing people together, etc. Evaluate walkways and pathways in a real or hypothetical landscape design plan. Apply evaluative criteria as suggested above to walkways and pathways being assessed on site. Identify: 1) existing conditions which need to be corrected - erosion, potholes, rerouting, etc., 2) conditions which should be prevented - footwear erosion from overuse, encroachment of vegetation, etc., and 3) conditions which could be enhanced by creating new pathways, signs, etc.	Select a hypothetical problem, e.g., develop a plan for a new pathway. 1. Investigate the problem-needs, kinds of pathways, etc. 2. Develop alternative solutions - routes, kinds of pathways, etc. 3. Choose a solution after considering effects of each. 4. Develop plan of carrying out solution. 5. Present plan for evaluation by others. Select a walkway or pathway problem to help resolve on the school site or in the community. 1. Investigate causes and effects. 2. Develop alternative solutions. 3. Choose a solution. 4. Develop a plan of action. 5. Carry out plan. 6. Evaluate results.

SUGGESTED CONSIDERATIONS FOR THE ELEMENTARY LEVEL

1. At the elementary level the children should be given opportunities and encouraged to utilize their senses in the observation of those things in their environment which are both natural and man-made. They should become aware of and investigate things according to shape, texture, color, odor, taste, sound, weight, size and location.

2. Children should be brought into contact and investigate at least a good sampling of natural resources - rocks, minerals, water, soils, plants, animals - both inside and outside the school.

3. During the elementary years children work, to a large extent, on the observational level, sensing and manipulating objects which are directly before them or symbols of objects in their minds. If the why of things is discussed, this should be done with reference to their own experiences and the physical objects with which they are familiar.

4. Consider the following sequence for <u>conceptual emphasis</u> when planning activities for a given grade level:

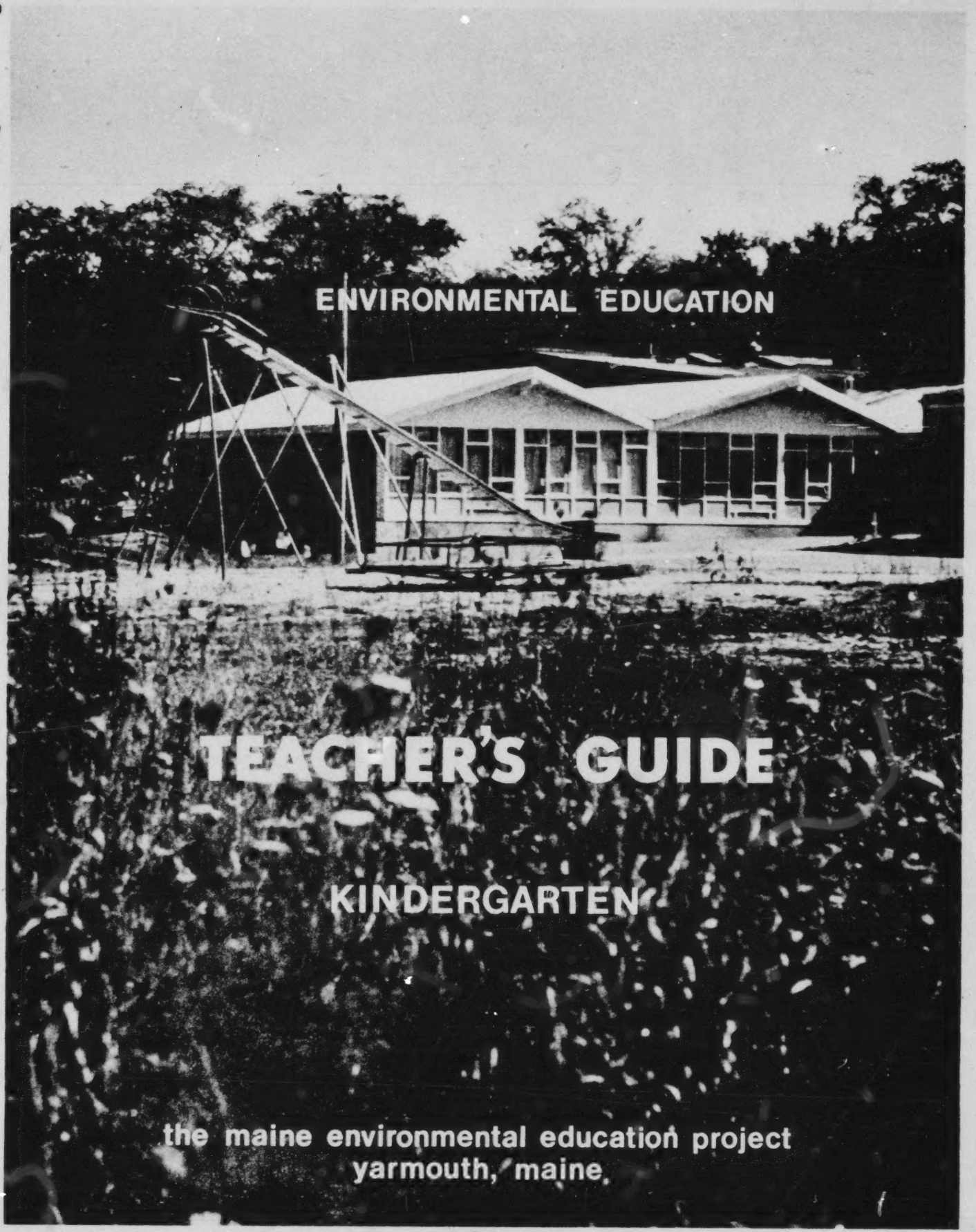
GENERAL CONCEPT EMPHASIS*

GRADE	NATURAL ECOSYSTEM CONCEPTS	HUMAN SYSTEMS CONCEPTS
7-12	At these grade levels the K-6 concepts which form the basis of the Program are applied by the student in process oriented demonstration situations. For example, concrete applications include the study of a Watershed, the study of a Human Settlement, and a study of the Land Use Issues.	
6	8. Natural ecosystems, through the processes of evolution and succession, tend toward a condition of stability.	8. Environmental problems are those conditions which affect the quality of life and result from the inefficient functioning of the human systems. 7. People provide for their needs by working on the natural resources through an institutional system and a technological system to produce and maintain the human environment.
4-5	7. The earth is a closed and finite system. 6. Energy flows through plants and animals at varying rates. 5. Matter cycles through plants and animals at varying rates.	6. Natural resources include those components of the natural environment which are of use to man. 5. The technological components of the human systems include the equipment and processes used in altering natural resources. 4. The institutional components of the human systems include government, economics, education, etc.
K-3	4. Changes occur continually in both the structure and function of natural ecosystems. 3. All living and non-living things are inter-related. 2. Each living and non-living component of the environment has its own unique characteristics. 1. The Natural Ecosystem is composed of Land, Air, Water, Plants, Animals and Energy.	3. The human environment can be considered to consist of the following areas or uses: -Human Settlement -Recreation -Community Services & Utilities -Production -Transportation/ Circulation -Open Space 2. Humans have physical, psychological, and social needs which must be met by the environment. 1. All human beings are ultimately dependent upon nature for survival.

* Note: Each grade level grouping includes its own concepts and those of the previous grades.

SECTION II

EXAMPLES OF ACTIVITIES & PRE-POST TESTS


ENVIRONMENTAL EDUCATION
TEACHER'S GUIDE
KINDERGARTEN
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Study Environment:

THE SCHOOL

The school environment is close to the learner. It is real to him and may be interpreted conveniently by teachers. In addition, it is a public area maintained and shared by many people and ideally presents opportunities for developing the concept of social responsibility.

The educational possibilities of the school environment have often been neglected with emphasis placed, instead, on improving the school facility, itself. Used as a teaching resource, however, the school can become a valuable tool in the education process. For environmental education, the school environment offers opportunities for many concrete experiences dealing with a variety of real environmental problems. In addition, the immediacy of the school makes it easy for the younger pupils to relate.

For the reasons stated above, the school has been selected as the study environment for kindergarten and grade one.

UNDERSTANDINGS FOR KINDERGARTEN

1. Nature is composed of plants, animals, land, air and energy. All are necessary.

2. All living things need food, air, sun and water in order to live.

3. All living things change.

4. Each living thing is unique.

5. There is a difference between natural and man-made components of our environment.

6. Man has the ability to make his environment more useful or harmful to himself and others.

OUTLINE OF A KINDERGARTEN PRESENTATION

- AN OVERVIEW -

Instructional Aids	Presentation
	I. HOW OUR SCHOOL CAME TO BE
Slides	When animals are very young, they depend upon their parents for food, shelter, and protection from their enemies. When they get old enough, their parents teach them how to live by themselves - to get their own food, find shelter, and avoid their enemies. We were once small, too, and needed to be cared for. As soon as we were old enough, our parents started to teach us to do things by ourselves. Our parents teach us many things, but, because there are so many things to learn and it takes a lot of time, our parents and many other parents and people in our town build schools and get teachers like (name of teacher) to help teach us.
Felt-Board Display	Just like animals try to find a nice place to bring up their young, the people in our town, some time ago, found a nice place to build our school. Do you think they found a nice place for our school?
Mounted Horned Owl	Probably before our school was built there were many trees here - maybe pine trees. Living in the dark pine forests there might have been the great horned owl.
Pine Branch	It takes many people working together to build a school. The people in our town decided to put the school on a little hill or knoll where it wouldn't be bothered by water running into it when it rained hard. They also decided to place the school near the road so it would be easy to get to. They cut trees to make room for the buildings. If you had been there, you would have probably smelled the good smell of the freshly cut pine in the woods.

Granite Samples

A place for a foundation was dug, and it was probably built of rocks, called granite, which we have in Maine in our area.

Clay Bricks- Fired and Unfired

Bricks were often used to build walls. They are made from clay earth which was dug in our area, shaped into bricks, and baked in big ovens.

Pine Sample Weathered Wood

Wood was used, too, for the roof and other parts of the school. The white pine, which is easy to cut and build with, was used a lot - maybe even the pine which was cut down to make room for the school. The wood was painted to make it last longer and protect it from the weather.

After the school building was done, grass was planted and trees were put in to make the school look better and make it a place for children to enjoy.

Sand and Gravel Samples

Boys and girls came to the school over roads. To keep the roads from being muddy and washing away, they were covered with sand and gravel, and ditches were made along the sides of the roads. Sand and gravel is made of all sizes of little rounded rocks. A lot of it can be found in our area still. Later, the sand and gravel was covered with a hard, black materials called asphalt. This was done so that the road would stay flat and smooth and wouldn't wash away when it rained hard. Some asphalt was also put on part of the school yard.

II. OUR SCHOOL TODAY

Chart

Today, our school has changed some and is still changing. We have many interesting things around it.

Robin

Insect Eaten Leaves

We have many grassy areas to play on. All kinds of animals - insects and earthworms, for example - live in the grass and beneath the soil. Birds help to keep insects from becoming too plentiful and destroying our trees and green plants because insects feed on parts of them. The robin is a bird which feeds on insects and worms.

Mounted Woodpecker and Oriole

We have many trees around our school. These help to make our school look pretty, and they give us shade from the sun. Trees provide food, shelter, and protection for our wildlife. Many kinds of birds, like the woodpecker and oriole, live in them.

Many schools have fences around them. They are put up so that you and things like balls, for example, will not accidentally get in the road. Many more cars go by our school than did a few years ago. There are more people with cars today, and they can go faster because cars and roads are better. We have to provide parking space for cars and special walkways for people so they won't get in the way of cars.

There are electric power and telephone lines and poles near our school which help us get electricity for our lights and furnaces and allow us to talk with people a long ways away.

Our school has a playground and equipment for your enjoyment. All people like to take time our of their work to relax and have fun.

Slides

We talked about using sand for roads, can we have fun with it, too? Where? When - what time of year? What season comes after summer? In the fall we start school. The animals are getting ready for winter. Some birds, such as the robin, are flying south where it is warmer.

Mounted Bluejay and Chickadee

Some birds, such as the bluejay and chickadee, stay behind throughout the next season. In the spring the new green leaves are beautiful; the birds are busy singing and building nests; and flowers are coming out. You will enjoy seeing our school next spring. Our school is a nice place to be during the seasons.

III. HELPING TO MAKE OUR SCHOOL A NICE PLACE

Slides

This is our school. What do you see here that you like - that makes it a nice place to be? Isn't it good that all the children in our town, like you, can come to this school. Each of us is very important to the school - what would a school be without children? And each of us can help to keep it a good place for learning and having fun.

Is there anything here that we could do to help make our school better?

Mounted Baby Robin

This is a baby robin. When he grows up he will have babies that he will have to care for and teach to live by themselves. Someday you will have children who will grow up and come to this school or one like it. We must try to keep our school good for our children so that they can come and enjoy it as much as we do. Also, you may have brothers and sisters who will come to this school. If we work together, we can help make it and keep it a nice place to come to.

IV. OUR FIELD TRIP

Some day soon we will take a trip around the school to see the things we've talked about today. Your teacher, some people from our town who like the outdoors, and I will take you. We'll see many interesting things. We will look for things that we can do to help make this an even better school and place to come to.

Your teacher and I will decide when will be the best time to go, and then we'll let you know. I'm really excited about this because you in kindergarten are the first to go on a trip like this this fall. Be sure to wear something warm and comfortable, and I'm looking forward to seeing you then.

OUTLINE OF A KINDERGARTEN FIELD TRIP

- ON THE SCHOOL SITE -

Suggested Interpretations of Environmental Themes Related to The School Site

MAN - MADE ENVIRONMENT

1. Human Settlement - examine the school building. What is it made of? If wood, why do we paint wood? (lasts longer). What kind of foundation does it have? (cement-granite). Why do schools have shingles? (water and fireproof). Fences for safety.

2. Transportation and Circulation - examine parking lot. Why is it blacktoped or tarred? (convenience). Are there sidewalks or paths leading to the school?

3. Community Services and Utilities - look for telephone poles, fire hydrant, drainage areas. Talk about mailmen that come to school.

4. Recreation - look for animals. Playground equipment - why painted? (to prevent rust). Do you like it? Is there enough to play on?

5. Production Areas - talk about gardens, planting flowers.

6. Open Space - any woods nearby? Talk about beauty of nature.

NATURAL ENVIRONMENT

1. Plants - look at nearby flowers, trees, shrubs. Notice color, collect different leaf shapes. Notice how plants change in the fall. Flowers die, leaves turn colors. Why do we have grass around the school?

2. Animals - try to find evidence of animals, bird nests, holes in trees and in the ground. Any birds flying around, animals running around? Where are animals in winter? (hibernate).

3. Water - any streams or ponds to look at? (clean, dirty)? Notice clouds, they make rain.

4. Land - notice whether flat, hilly, rocky. Is there any erosion?

5. Air - clean and fresh here? It can change with pollution.

6. Energy - (sun). Sun is constantly moving. (sunrise, sunset). The sun goes to bed at night and gets up in the morning.

REMEMBER TO POINT OUT:

1. All living things are different. Examine two leaves from the same tree - see that they are different. Talk about how all rabbits are different even if they are the same color.

2. All things change and GROW

   a) Trees change color, die, grow new leaves.
   b) Sun moves across sky
   c) Animals hibernate
   d) Metal rusts, wood rots
   e) Children grow
   f) Trees grow
   g) Plants grow from a seed
   h) Animals (rabbits) grow

3. All living things, no matter how beautiful or ugly, are important to our environment. A rotten log is home for many animals.

OUTLINE OF A KINDERGARTEN CLASSROOM ACTIVITY

The RABBIT As An Example of the Interrelationships of All Living Things

Exhibit a live rabbit:

1. Who knows what kind of animal this is?
2. What color is he?
3. Have you ever seen a wild bunny?
4. Do you like rabbits?
5. What does our rabbit need to have in order to stay alive?
   a) Food (carrots, plants). What else? What does he drink?
   b) Water. What does he breathe?
   c) Air
6. How about you, a person, what do you need to stay alive?
   Food - Air - Water
7. You have the same needs as all living things.
8. What are all the living things you can think of?
   a) Plants
   b) Animals (dogs, cats, rabbits)
9. Why do you think our bunny has such big long ears?
   a) To hear with?
   b) To hear what? (people, enemies)
10. What are enemies of our rabbit? Who might eat him?
    a) Birds (hawks, eagles, owls)
    b) Animals (dogs, foxes)
11. Why do you think he has such big legs? To get away from his enemies.

Felt Board - Felt Board Pieces*

1. What did we say rabbits eat?
   Food - put carrots on the felt board.

2. Who eats bunnies? Birds, animals.
   Put hawk on felt board.

3. What do the plants need to live?
   Sun, food in the soil, water, air.

   ALL LIVING THINGS NEED SUN, FOOD, WATER AND AIR.

4. Is there any bunny alive that is just like our bunny?
   No. He is unique and he changes every day.
   Will he be exactly the same next year?

5. How about you? Are there any other Amy's or Jim's?
   No. All are unique.

Role Playing Game

Now we are going to play a game. I need a

- Fish
- Tree
- Boy
- Cat
- Horse

Discuss needs of each: FOOD, AIR, WATER

Use of each: Pets, shade, food, etc.

* Felt board pieces - rabbit, carrots, hawk, sun, grass, clouds, rain, puddle, trees

OUTLINE OF A KINDERGARTEN SCHOOL SITE IMPROVEMENT ACTIVITY

PLANTING FLOWER BULBS

1. Explain the four (4) steps to flower planting

   a. How to plant

      Make a flower growth chart. Explain when to plant, what flowers need to grow (food, water, air and sun).

   b. Look for different places to plant. This place must give the plant food, water, air and sun.

   c. Decide where to plant.

   d. Have all the children participate in some way with flower planting.

      Digging,

      placing the bone meal (food),

      watering.

2. The children can draw a picture of something they remember that we studied during our environmental week. The teacher and aides will write a story on each child's picture explaining it, allowing individual contact and something to take home to the parents.

Student's Name_____

Date_____

PreTest_____

PostTest_____

MAINE ENVIRONMENTAL EDUCATION PROJECT

Title III, ESEA, 306

KINDERGARTEN

PRE-POST TEST

SCORING	QUESTIONS
	CONCEPTS
1. _____ (4) Water_____ Land_____ Plants_____ Air_____	1. Natural Environmental Components (slide of a school) From this picture of a school name all of the different kinds of things which are a part of nature.
2. _____ (1) Yes_____ No_____	2. Characteristics of Natural Components (slide of a rabbit) Are there other rabbits exactly like this rabbit?
3. _____ (8) Water _____ Sun _____ Grass _____ Clouds & rain _____ Building _____ Fish _____ Tree _____ Road _____	3. Interrelationships of Natural Components (slide of a rabbit & flashcards) Which of these things does a rabbit need to live?

4. _____ (4)

Mother bird _____

Baby bird _____

Nest _____

Tree _____

4. Changes of Natural Components
(slide of a flycatcher)

Point to the boxes on those natural things that change or will be different next year.

5. _____ (5)

Picnic table _____

Land _____

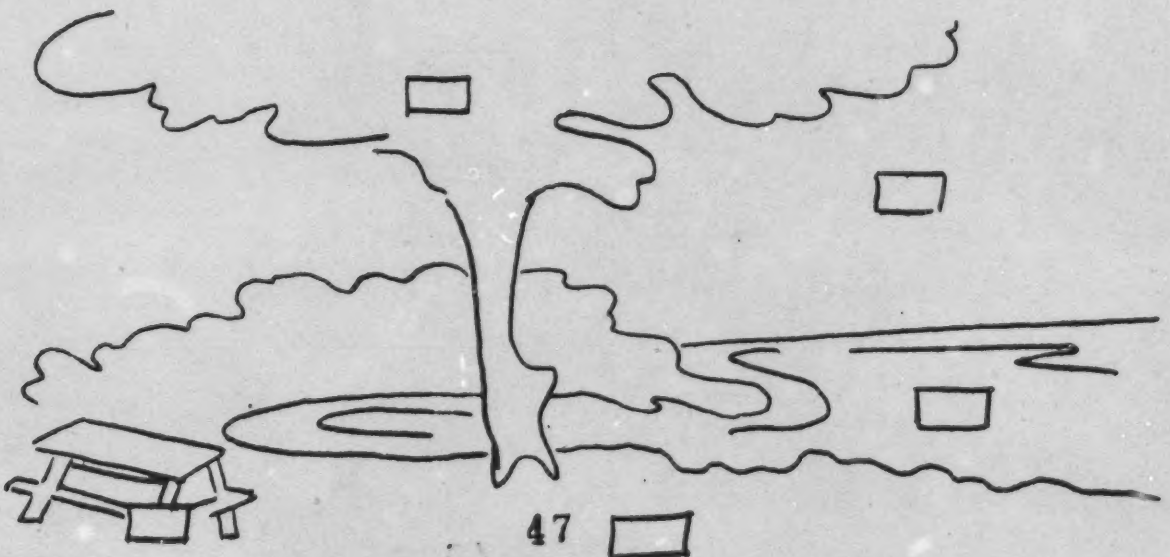
Plants _____

Water _____

Air _____

5. Human Dependency on Nature
(slide of a natural scene)

Point to the boxes on those kinds of things that you don't need in order to live.



6. _____ (6)

a. Convenience ____

b. Aesthetic ____
Protects Soil ____

c. Safety ____

d. Durability ____

Aesthetic ____

6. Human Needs (slide of a school site)

a. Why is there blacktop?
Are there any other reasons?

b. Why is grass planted near the school?
Are there any other reasons?

c. Why is the fence there?
Are there any other reasons?

d. Why is the building painted?
Are there any other reasons?

7. _____ (5)

7. Human Environmental Components (slide of a school site)

In this picture of a school name the things people have done to make it a better place to be.

Buildings (Human Settlement) ____

Fence, roads, drives, walk-ways (Transportation) ____

Playground and equipment (Recreation) ____

Utility Pole and wires (Public Utilities) ____

Natural objects (Open Space) ____

FEELINGS

8. _____ (2)

2 1 0

8. Toward Nature (slide of a natural scene)

Point to the face which shows how you feel about this picture.

9. _____ (2)

2 1 0

9. Toward Nature (slide of a natural scene)

Point to the face which shows how you feel about this picture.

10. _____ (2)

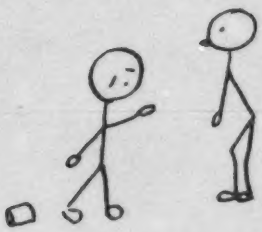
2 1 0

10. Toward Nature (slide of a natural scene)

Point to the face which shows how you feel about this picture.

11. _____ (2)

2 0 1



11. Toward Self (slide of a littered can)

You saw a person drop this can. Point to the picture which shows what you would do.

12. _____ (2)

2 1 0

12. Toward Others (slide of people in a deprived situation)

Point to the face which shows how you feel toward the people in this picture.

13. _____ (2)

2 1 0

13. Toward Others (slide of people in a deprived situation)

Point to the face which shows how you feel toward the people in this picture.

14. _____ (2)

2 1 0

14. Toward Others (slide of people in a deprived situation)

Point to the face which shows how you feel toward the people in this picture.

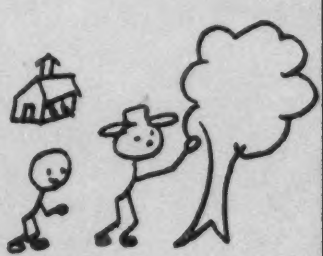
SKILLS

15. _____ (2)

1 0 2

15. Discovery-Inquiry (slide and Ditto sheet)

Here is a picture of a school. Point to the picture which shows the best way for you to find out about the kinds of trees on your school grounds.



16. _____ (10)

16. Evaluation-Problem Identification (slide)

What could be done here to make this a better place to live?

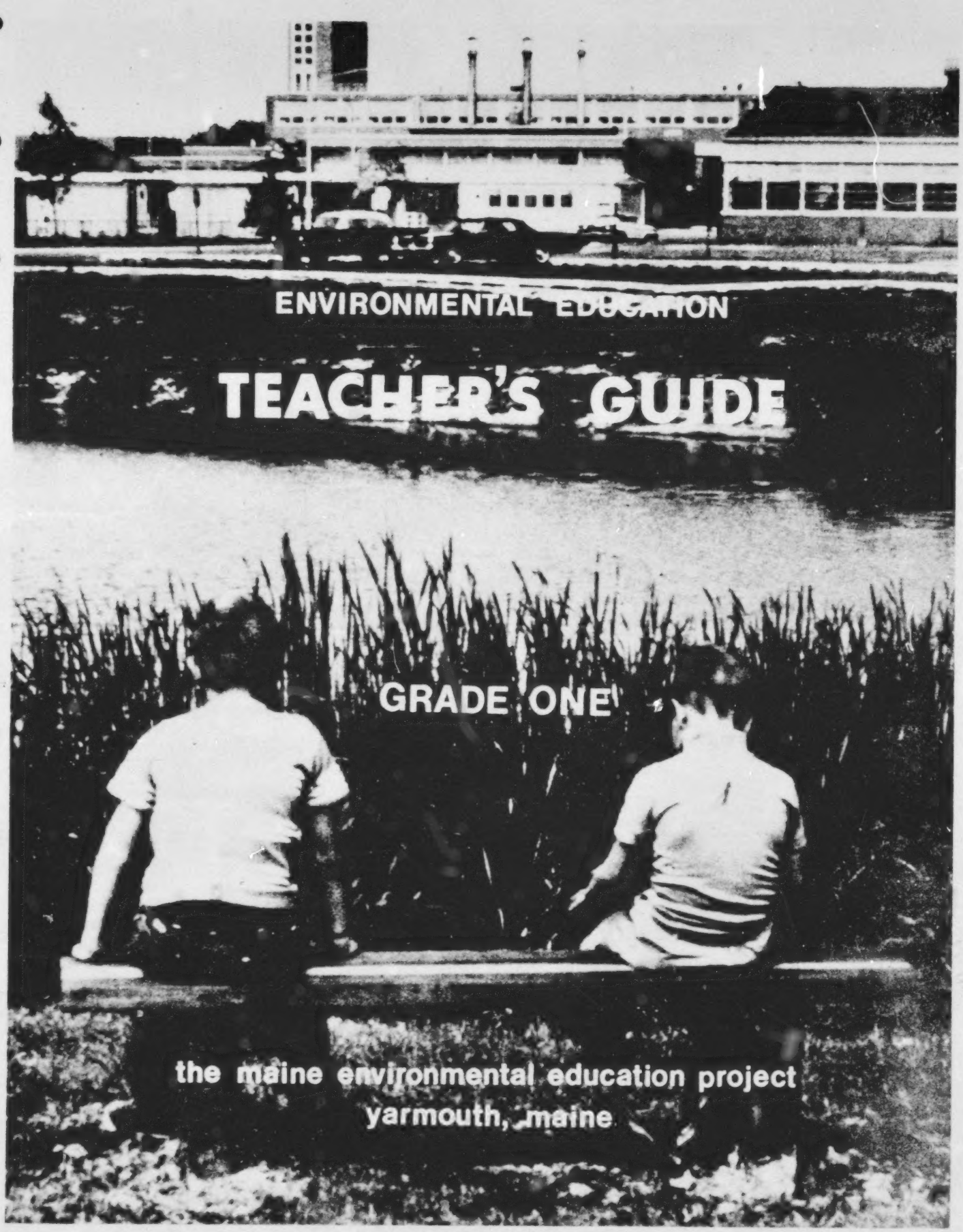
1)_____ 6)_____
2)_____ 7)_____
3)_____ 8)_____
4)_____ 9)_____
5)_____ 10)_____

17. _____ (3)

1 3 2

17. Problem-Solving (slide)

If you were going to plant this flower, what would you do first, second and third?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For the reasons stated above, the school has been selected as the study environment for kindergarten and grade one.

CONCEPTS FOR GRADE ONE

1. Plants, animals, water, land, air and energy compose the natural environment. All are necessary and useful.

2. All living things need food, air, sun and water in order to live.

3. All living things change.

4. Each living thing is unique.

5. The earth can be thought of as a spaceship containing all the air, water, and land which will ever be available.

6. There is a difference between the man-made and natural components of our environment.

7. Man uses his environment to meet his needs and he has the ability to make it more useful or harmful to himself and others.

8. Not all people have adequate food, water, air, shelter and protection.

ENVIRONMENTAL EDUCATION CORE EXPERIENCES

The following experiences can be integrated into the existing curriculum as a core which touches upon the major concepts, feelings and skills as outlined in the previous section. They will probably suggest additional enrichment activities which would expand beyond what the standardized curriculum is able to offer. They are not in any way to be viewed as inclusive. Rather, they are intended to be examples of the different types of techniques and emphases offered by environmental education.

The core experiences are presented in a pattern which follows the three process phases of environmental education as illustrated below:

INQUIRING DISCOVERING		EVALUATING-PROBLEM IDENTIFYING	PROBLEM SOLVING
Activity One	Activity Two	Activity Three	Activity Four
Classroom Presentation - slide lecture overview	Field Trip - first-hand investigation and on-site discussion	Valuing Exercise - classroom or on-site discussion and problem identification	Improvement Activity - school site or community action project

It should be noticed that core experiences abandon subjects, per se, and challenge the student to identify socially and environmentally significant content which orients itself around the problems of everyday living.

It is to be hoped that in the study of topics and issues dealing with personal and community concerns that the student will learn to weigh and balance evidence and be prepared to cope in his own way with these problems.

OUTLINE OF A GRADE ONE PRESENTATION

- THE SCHOOL -

Understandings To Be Developed

- There is a difference between the man-made and the natural environment.
- All living and non-living natural components change.
- Man uses his environment to meet his needs and he has the ability to make it more useful or harmful to himself and others.
- Schools in the past and present reflect human needs and what people have done to meet these needs.
- Not all people have adequate food, water, air & shelter.

Instructional Aids	Presentation
	I. INTRODUCTION TO OUR SCHOOL
Slides	We are fortunate to have such a nice school to go to. The school building is an important part of our school. School buildings are often made of brick to last a long time. The parts of the building that are made from wood are painted to make them look nice and to preserve them. Another important part of the school is the school site. Here there are places for cars, walkways, fences, and play equipment. Trees and other plants around a school building are pleasant to look at, provide protection from sun, wind and cold, and attract wildlife. Some schools have water near them and this creates another wildlife attraction. All animals need food (plants and animals), shelter (land, trees, shrubs), air water and sun.
	II. OUR SCHOOL IN THE PAST
Chart	School sites were once in a natural state. As the town grew there were more children and and people needed to build schools for them. A site was selected where the ground was solid and

dry and close to where people lived. A strong foundation was built (granite), walls and roof were usually wooden. The location of the school had to be convenient for children to get to because transportation was not as efficient as it is today. Early schools had bells outside which would be rung loudly so that all the children would know when it was time for school to begin. Heat was provided by stoves which burned wood or coal. There was not much play equipment outside.

III. OUR SCHOOL TODAY

Today schools have changed. School buildings are built differently. They are larger with more windows and are more comfortable places to be. Most schools have a large parking lot for cars and buses, paths and walkways where children can safely be out of the way of traffic. Many of these areas are paved with concrete or tar. Playgrounds are large and have lots of play equipment on them. Fences are put up to protect children. Lights around the school are also helpful for safety. Utilities such as electricity, water, and heat are provided. On the school grounds trees are usually planted to replace those cut down when the school was built.

IV. KEEPING OUR SCHOOL GOOD

Slides

Too often people are not careful enough to keep schools in good condition. Sometimes they damage trees or do not care for them properly. Some people carelessly throw litter around. What does litter do to our school?

Land that is not cared for can become eroded. Paving certain areas can prevent erosion. Planting grass and trees and putting in drainage ditches or culverts can help prevent erosion. People who plan school sites need to provide ways for storm water to move so that it does not damage the soil.

School sites should also be planned so that playgrounds are located where noise of children playing will not disturb others. Schools should be placed where noise from traffic and industry will not disturb the children and teachers.

To make schools look better, in some places power and telephone lines are being placed underground.

By working together we too can fix some of the things around our school that we don't like and help make the school better. Can you think of anything we can do for our school to make it better? Planting some new trees around the school would help.

Someday you may have children who will go to this school. Or your younger brothers and sisters may be going to school here. The school should be kept good for them. For instance, maybe they will enjoy in the future the trees that we plant now.

Not all people have nice schools to go to. Some people who don't have enough money to spend can't afford to live in an area where the schools are good. Some people don't spend enough time or money on keeping up their surroundings. How does it make you feel to see poor people and deprived neighborhoods and schools.

V. OUR FIELD TRIP

Tomorrow we will take a field trip around the school to look at the things we have talked about today. We will examine the school building and the school site and point out things people have done to make the school good and useful and things people have done which are harmful.

OUTLINE OF A GRADE ONE FIELD TRIP

- ON THE SCHOOL SITE -

Understandings To Be Developed

- Plants, animals, water, land, air and energy compose the natural environment. All are necessary and useful.

- There is a difference between the man-made and natural components of our environment.

- People use their environment to meet their needs and they have the ability to make it more useful or harmful for themselves and for others.

Environmental Themes Related to the School

MAN - MADE ENVIRONMENT

1. Human Settlement - The school is located in a safe, dry place. What is it made of? (wood, bricks). How is the building protected? (paint). Why is the roof slanted? (drainage). Why do buildings have foundations? (strength and durability). Older buildings used granite rock for foundations, new buildings use cement.

2. Transportation and Circulation - Parking lot (why is it paved?). What happens to traffic areas that aren't paved? (erosion, mud, cars get stuck). Where does water go to when it rains on tar? (run-off - need for drains). Why do schools have sidewalks? (safety and protection of lawn).

3. Community Services and Utilities - What services go into our school (telephone, electricity, water, food, paper and supplies). What wastes go out of our school? (waste paper, waste water, left-over food). How can you help save on these resources? (use only the paper you need and recycle it in your classroom, turn off water faucets tightly and use only the water you need, eat your lunch).

4. Recreation - Look at playground equipment. Why is it painted? (to prevent rust). Do you like it? Is there enough?

5. Production Areas - Planting flowers and gardens around the school.

6. Open Space - Talk about the importance of having open space for animals and people. Look at the beauty in nature.

NATURAL ENVIRONMENT

1. Plants - Are plants necessary for life? (yes, for food for us and other animals, to give our air oxygen). Look at nearby flowers, trees and shrubs. Notice the different sizes, shapes, colors, smells, tastes (wintergreen). How do plants change in winter?

2. Animals - Are animals necessary for life? (yes). Try to find evidence of animals, bird nests, holes in trees and in the ground. Where are the animals in winter. (some hibernate).

3. Water - Is water necessary to live? (yes). Look at nearby sources of water. Is it clean or polluted? Where does rain come from?

4. Land - Is land necessary to live? (yes). Notice whether flat, hilly, rocky. If there any erosion?

5. Air - Is it necessary to live? (yes). Is the air clean and fresh? How can it change?

6. Energy - Is it necessary to live? (yes). It warms our world, grows our plants. It is constantly moving. (sunrise, sunset).

OUTLINE OF A GRADE ONE CLASSROOM ACTIVITY

Understandings to be developed:

- Plants, animals, water, land, air and energy compose the natural environment. All are necessary and useful.
- All living things need food, air, sun and water in order to live.
- All living things change.
- Each living thing is unique.
- The earth can be thought of as a spaceship, containing all the air, water, and land which will ever be available.

Presentation:

INTRODUCTION TO NATURE (with slides)

What are the parts of Nature? Plants, animals, water, land, air and the sun. Are all of the parts of nature present in this slide of your school? What do living things need in order to live? This animal needs sun? water? air? plants? animals?

All living things grow and change. How will these babies be different next year? How will this sapling be different next year?

MAMMALS (with slides)

What is a mammal? A mammal is an animal that has fur, feeds it's young milk from mammary glands, and whose babies are born alive (not hatched).

Which of these animals are mammals? (bear, snake (scales), bird (feathers), cat, people, fish, fox).

NATURE APPRECIATION

All of the parts of nature (plants, animals, sun, water, air, land) are necessary and useful. How do these slides make you feel. Slides of Nature including:

rotten logs	swamps
mountains	scenic overlooks
bears	snakes

insects.

MAKING A TERRARIUM

Materials:

A glass jar (mayonnaise jar)	Digging tools
Rocks, soil, gravel	Plants
Magnifying glasses	Worms, insects and "critters"

Procedure:

a) Take a short trip outside and bring digging tools.

b) Collect plants, rocks, gravel, soil, worms, insects and return to the classroom.

c) Look at the collected material under a magnifying glass.

d) Look at the plants collected, pointing out various parts.

e) Construct the terrarium, placing collected material in jar in the following order:

1. rocks and gravel
2. soil
3. plants
4. insects.

f) Begin daily observations of the activity in the terrarium.

Discussion Questions:

a) Why is the terrarium like a "mini" world?

b) What do the plants need in order to survive?

c) Where do plants get food for their growth? (sun and carbon dioxide from the air)

d) Could the plants survive without the air, water and soil?

e) Where do the animals get their food for growth and survival? (Oxygen from the air, water, plants, etc.).

f) What else do animals need for survival? (Sun, land and other animals).

g) What do people need to survive?

h) What will happen if our air and water become more polluted?

OUTLINE OF A GRADE ONE PROBLEM SOLVING ACTIVITY

- SCHOOL SITE DEVELOPMENT -

Understanding To Be Developed

- People use their environment to meet their needs and they have the ability to make it more useful or harmful for themselves and for others.

1. Make a list of the problems seen on your school site field trip. What can be done about these problems? Which improvements are possible to carry out on your school site? List them on the board. Possible improvements include:

   a. improved playground facilities
   b. outdoor classrooms
   c. organic gardening
   d. planting trees and flowers
   e. cleaning school grounds
   f. creating an interpretive natural area
   g. improving eroded areas
   h. creating bikeways
   i. improving pathways and sidewalks

2. EXAMPLE of An Improvement Project for a First Grade Class

   Tree Planting - suggested activity sequence

   1. Investigate the kinds of trees that one might plant on the site.

   2. Decide which kind to plant.

   3. Contact State Forestry or local nursery for free and inexpensive trees.

   4. Learn how to plant a tree by reading a book about tree planting or talking to a tree expert (local garden club, soil conservationist, town forester).

   5. Find a suitable planting site for the tree you choose (suitable soil, drainage, amount of sunlight and temperature).

   6. Bring the proper planting tools and plant the trees.

Student's Name_____

Date_____

PreTest_____

PostTest_____

MAINE ENVIRONMENTAL EDUCATION PROJECT

Title III, ESEA, 306

GRADE ONE

PRE-POST TEST

SCORING

QUESTIONS

CONCEPTS

1. _____ (4)

Water _____
Land _____
Plants _____
Air _____

1. Natural Environmental Components
(slide of a school)

From this picture of a school name all of the different kinds of things which are a part of nature.

2. _____ (1)

Bear _____
Chipmunk _____
Salamander_____
Deer _____

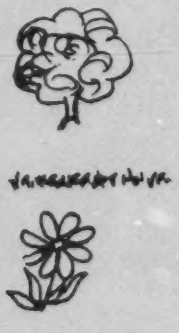
2. Characteristics of Natural Components
(chart)

Point to the picture which does not belong with the others.

3. _____ (3)

3. Interrelationships of Natural Components

Draw a line from the picture of the animal to the plant it goes with best.

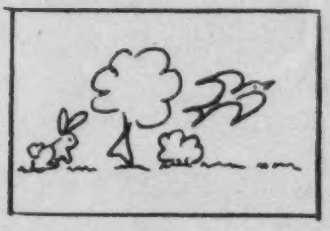


4. _____ (1)

4. Changes of Natural Components

Look at this picture.

Which picture below shows what you think this picture will look like in five years?



5. _____ (5)

5. Human Dependency on Nature (slide of a natural scene)

Moose _____ (animals)

Trees _____ (plants)

Water _____

Air _____

Land _____

Name the kinds of things in this picture which are useful to people.

6. _____ (7)

6. Human Needs (slide of a school site)

USEFUL

Blacktop _____

Painted Game _____

Building _____

Name everything you see in this picture that is useful in making the school a nice place to be and name everything you see that is harmful to this school.

HARMFUL

Weathered shingles _____

Foundation crack _____

Broken glass _____

Cracked blacktop _____

7. _____ (5)

Buildings (settlement) ____

Roads, drives, parking (transportation) ____

Playground & equipment (recreation) ____

Utility wires (public utilities) ____

Trees, grass, natural objects (open space) ____

7. Human Environmental Components (slide of a school site)

In this picture of a school name the things people have done to make it a better place to be.

FEELINGS

8. _____ (2)

8. Toward Nature (slide of a natural scene)

Point to the face which shows how you feel about this picture.

2 1 0

9. _____ (2)

9. Toward Nature (slide of a natural scene)

Point to the face which shows how you feel about this picture.

2 1 0

10. _____ (2)

10. Toward Nature (slide of a natural scene)

Point to the face which shows how you feel about this picture.

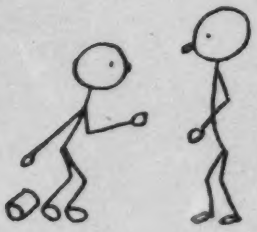
2 1 0

11. _____ (3)

11. Toward Self (slide of a littered tin can)

You saw a person drop this can. Point to the picture which shows what you would do.

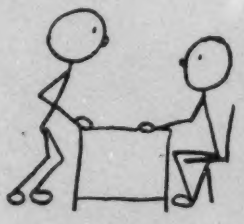
3 0 1 2



Ask the litterer to pick up the can

Walk past the can

Pick the can up yourself



Tell your teacher what you saw

12. _____ (2)

12. Toward Others (slide of people in a deprived situation)

Point to the face which shows how you feel toward the people in this picture.

0 1 2

13. _____ (2)

13. Toward Others (next slide of a deprived situation)

Point to the face which shows how you feel toward the people in this picture.

0 1 2

14. _____ (2)

14. Toward Others (next slide of a deprived situation)

Point to the face which shows how you feel toward the people in this picture.

0 1 2

SKILLS

15. _____ (3)

15. Discovery-Inquiry (slide of a school site)

Here is a picture of a school. Point to the picture which shows the best way for you to find out the kinds of trees on your school grounds.

2 1 3

Look at the trees yourself

Look at pictures of trees

Look at trees with someone who knows about them

16. _____ (6)

a b c d e f

16. Evaluation-Problem Identification
(slide of a school site)

Which of the following changes would make this school a better place to be?

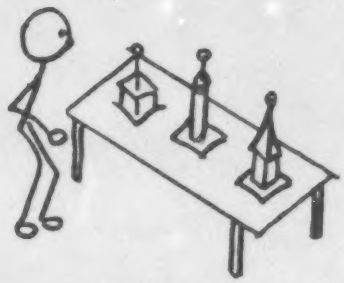
a. Plant shrubs
b. Add another flagpole
c. Plant grass
d. Sweep driveway
e. Move playground nearer building
f. Move the school building closer to the road

17. _____ (3)

a b c

17. Problem Solving (slide of a bird)

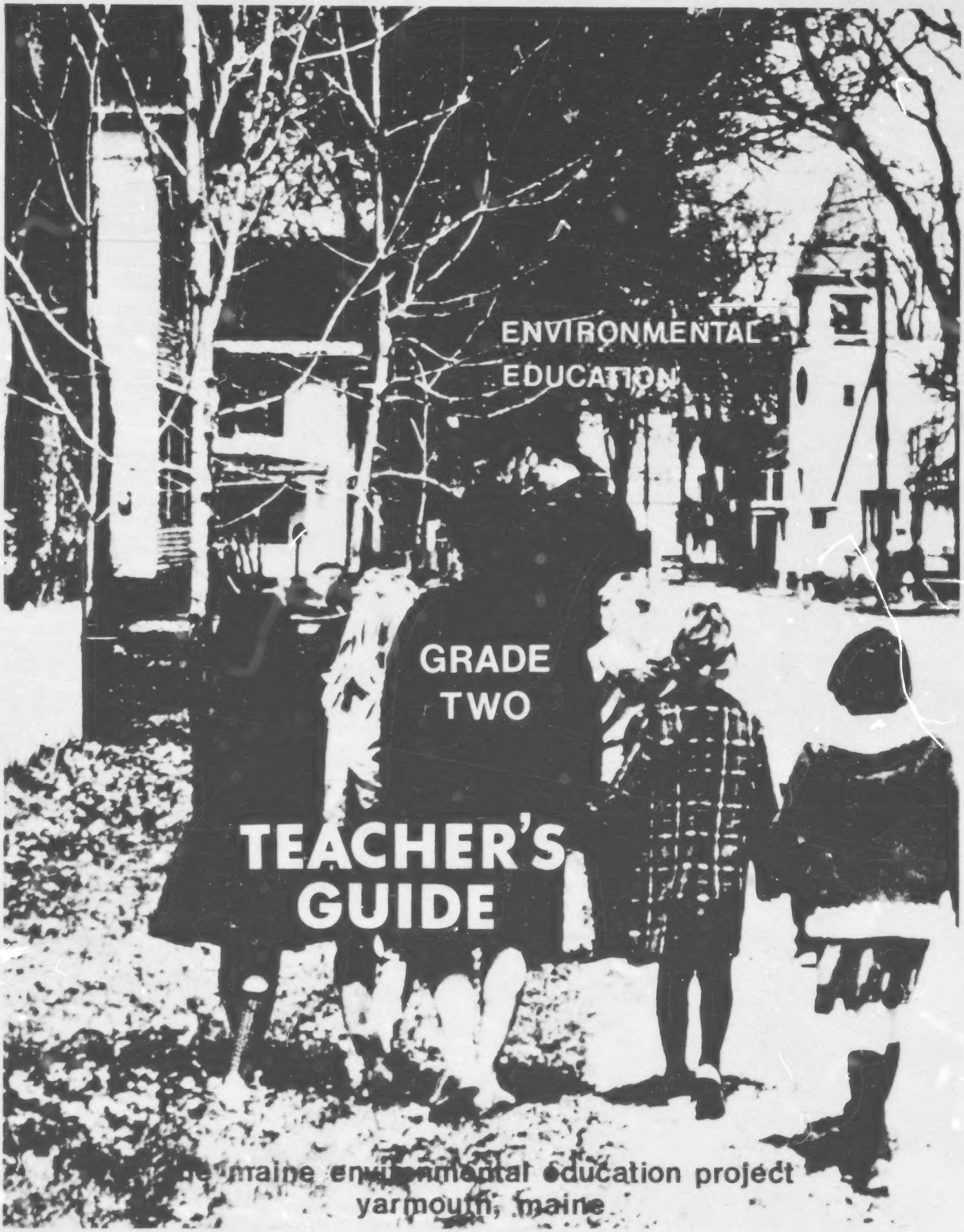
If you wanted more of this favorite bird around your school, what would you do first? second? third?



a. Decide what kind of feeder the bird would like

b. Put out the bird feeder

c. Find out what this bird is


ENVIRONMENTAL
EDUCATION
GRADE
TWO
TEACHER'S
GUIDE
maine environmental education project
yarmouth, maine

Study Environment:

THE NEIGHBORHOOD

The neighborhood environment plays a large role in the development of a child. It is close to him. Many impressionable events occur here and remain through the rest of the child's life.

A neighborhood which is well designed, beautiful, and possesses pleasingly varied natural and man-made features can do much toward enriching life and reinforcing the proper attitudes about the environment and its quality.

Since it is not remote it is a place where students can have first-hand experiences and a place where teachers can interact with the students to instill a personal sense of pride in the home and its surroundings.

In grade two and three an environmental education program can move away from the school and focus on the environmental elements which comprise the neighborhood. It can also look at the problems and, just as importantly, the opportunities for improvement which exist. In many cases, the children can become directly involved.

CONCEPTS FOR GRADE TWO

1. Nature is composed of land, air, water, plants, animals, and energy (sun).

2. All living things are adapted to live in certain types of areas which are their habitats.

3. All living things are interrelated with each other and the non-living environment.

4. All living and non-living natural components change.

5. People depend on nature ultimately to fulfill their needs.

6. Human neighborhoods, past and present, reflect human physical, psychological, and social needs and wants and what man has done to meet these needs and wants.

7. Human neighborhoods demonstrate how people can create both useful and harmful conditions.

OUTLINE OF A GRADE TWO PRESENTATION

- THE NEIGHBORHOOD -

Understandings To Be Developed

- All living things are adapted to live in certain types of areas which are their habitats.
- All living things are interrelated with each other and the non-living environment.
- All living and non-living natural components change.
- People depend on nature ultimately to fulfill their needs.
- Human neighborhoods, past and present, reflect human physical, psychological, and social needs and wants and what man has done to meet these needs and wants.
- Human neighborhoods demonstrate how people can create both useful and harmful conditions.

Instructional Aids	Presentation
Slides	I. INTRODUCTION TO THE NEIGHBORHOOD

Most animals have homes - a place where they find shelter from the wind, cold, rain and protection from their enemies. Some animals store food in their homes. The chipmunk does this in his home and sleeps on a large pile of nuts during the winter. Occasionally he wakes up and has a snack.

Around animal's homes are areas called territories. Each animal or family of animals has a territory of its own and will drive unwanted animals away. The place where animals have a habit of living is called a habitat.

The area around our home where we live is called our neighborhood. A neighborhood may contain many homes like a habitat may have many animal homes.

Some animals, like deer in winter or wolves, live together to help each other in getting food and for protection. People, too, often live near each other in homes. Like deer in winter that make trails in snow so they can travel easily, people in neighborhoods each help to make streets and sidewalks which they can travel on. They do this by each giving some money to have it done.

A neighborhood, then, is a place where people like to live so they can help each other.

II. HOW NEIGHBORHOODS DEVELOPED

Chart #1

In the early days many of the settlers were farmers. They lived quite far away from each other on farms. Some people, however, operated mills, stores, and built ships. Many of these people lived closer together in a town near their work. The streets or areas where they lived were called neighborhoods.

Many of their homes were made of wood, including pine and spruce which grew abundantly nearby. Often neighbors helped each other build their homes by having "building bees" in which everyone worked for no pay. They could build a home quickly in this way.

Chart #2

Many homes had small dumps located behind them where they put their rubbish. Also, behind many homes or nearby, there were fields and small gardens. Sometimes deer and other animals would get into the gardens and eat the vegetables. There were plenty of places for kids to play, but many of them had chores to do like getting in wood, helping in the garden, and carrying water. The water often came from outside wells with one well sometimes serving several homes.

The streets which were heavily traveled were sometimes made of stones called cobble stones. In the winter a roller drawn by horses or oxen was used to pack down the snow. Sidewalks were usually just paths along the edge of the road. Most driveways were usually quite muddy in the spring unless they were made of stone. Sand and gravel was good to use for paths and drives because water would drain through it easily. Homes had stables instead of garages, and many had a hitching post outside. At night lamps would guide travelers. These were often located near homes and had to be lighted in the evening.

People in the town often planted trees to give their homes shade and make their neighborhoods look good. The elm tree was a common one which they planted because it is large and gives a lot of shade.

This, then, was the kind of neighborhood our great grandparents might have lived in. It was a place where people lived near each other and were ready to help each other when help was needed.

III. NEIGHBORHOODS TODAY

Chart #3

Today, more people live in neighborhoods and fewer on farms. Some neighborhoods still look much like they did many years ago. There are still many beautiful old large white houses with shutters. Other neighborhoods are new with many smaller homes of different shapes and colors. Around many homes today there are often benches, tables, lights, lawn ornaments, and other things to make the outside of the home more usable. Some still have a small garden out back, but most of the rubbish is taken away to a community dump.

Many homes have pretty trees and shrubs planted around them on beautiful lawns. What are some of the things you like about trees and shrubs around a home? Many of these attract birds and other animals near our homes where we can watch them and enjoy them. Some of these might include the robin, rose breasted grosbeak, and sparrow. Many homes also have feeding stations and bird houses outside.

Mounted birds

Many neighborhoods are near animal neighborhoods or what did we call them? (habitats). These might be forest, shrubland, field, or water habitats. Different kinds of animals live in each habitat. Animals, like people, try to live in a neighborhood that is best suited to their needs. A rabbit, for example, would live in a shrubland, but if he lived in a field his enemies would see him. Tall trees would not protect him much either. What kinds of animal neighborhoods or habitats do you have near your home? Natural areas are good to have near your home because they are not only interesting and pretty but they give us privacy, provide a place for recreation, and make our homes worth more.

Many homes have their own play equipment and play areas. Sometimes, we have neighborhood parks that everyone can use so kids can play together and so that children that don't have their own playground equipment can use the neighborhood's. Do you like the idea of having neighborhood parks and play areas? Why?

Our homes also have driveways and walkways. Our neighborhoods usually have sidewalks so that people can travel safely and easily from place to place.

IV. PROBLEMS AND SOLUTIONS

Chart #4

Not all neighborhoods are the same. Some people don't care how their homes look, but most people do and are trying to make them better. There are usually many opportunities to improve neighborhoods:

- -animal habitats do not exist
- -houses are so close together there is little space for trees, lawns, recreational areas and site furniture
- -parking space is not adequate and sidewalks do not exist or are in poor condition
- -lighting is poor and utility lines are unsightly
- -trash is left behind homes rather than taken to the dump and it invites animal pests like rats and can become a fire hazard, and
- -trees are not properly cared for and they may be dying of disease.

There are a lot of things people can do to make a neighborhood a nice place to be. Can you think of some?

V. OUR FIELD TRIP

Tomorrow we will take a trip on a bus around our town to see neighborhoods. We will get off the bus in some places and walk through the neighborhood looking at some of the things we've talked about today. We'll see some good things and some things that we might do to make the neighborhood better. This trip should be very interesting.

OUTLINE OF A GRADE TWO FIELD TRIP

- IN THE NEIGHBORHOOD -

Understandings to be Developed

- Nature is composed of land, air, water, plants, animals, and energy (sun).
- All living and non-living natural components change.
- People depend on nature ultimately to fulfill their needs.
- Human neighborhoods, past and present, reflect human physical, psychological, and social needs and wants and what man has done to meet these needs and wants.
- Human neighborhoods demonstrate how people can create both useful and harmful conditions.

HUMAN ENVIRONMENT

1. Human Settlement

Older homes in the area are generally larger, with granite foundations, some still have barns.

Newer homes are generally smaller, with cement foundations, garages instead of barns, driveways often paved, more variety of styles.

2. Transportation and Circulation

Changes with time, evidences of horses (hitching posts).

Black topped or tarred roads instead of cobblestone, dirt or brick roads.

The use of signs for traffic needs for gas stations, sidewalks, air pollution with cars, noise pollution.

3. Community Services and Utilities

Telephone wires and poles	Fire hydrants
Water towers	Street drains
Street lights	

4. Recreation

Neighborhood play areas to play together and provide recreation for everyone.

5. Production Areas

Planting of neighborhood trees, neighborhood beautifications, neighborhood and individual gardens, local factories and small businesses.

6. Open Space

Animal habitats near the river, woodland, ponds, ocean.

NATURAL ENVIRONMENT

1. Plants are Part of Nature

This includes grass, trees, flowers, shrubs. Discuss the need and the value of having trees and other plants in our neighborhood. Examine a sick elm tree. Ask the students how they feel they can find out more about what made the tree sick (ask an expert, a tree warden).

2. Animals are Part of Nature

Try to find evidence of animals (bird nests, holes in trees and in the ground). Talk about where animals are in winter. Animals must live where their needs are met.

3. Water is Part of Nature

Discuss the uses of water in neighborhoods (fire hydrants, animals need to drink, house uses). Talk about clouds (they make rain).

4. Land as a Part of Nature

Notice whether flat, hilly, rocky. Check for erosion. Also mention the use of rock for foundations and the need for good land and soil.

5. Air

Stress the importance of clean air and causes of pollution including incinerators, cars, burning leaves, etc.

6. Energy

The sun is part of nature and is necessary for life. It is constantly changing as is all nature.

Remember to Point Out:

1. The difference between natural and human environments.
2. Human dependency on nature.
3. All living things, no matter how beautiful or ugly, are important to our environment.
4. All living things grow and change.

OUTLINE OF A GRADE TWO CLASSROOM PRESENTATION

Understandings To Be Developed

- Nature is composed of land, air, water, plants, animals and energy.
- All living things are adapted to live in certain types of areas which are their habitats.
- All living things are interrelated with each other and their non-living environment.
- All living and non-living natural components change.

Instructional Aids	Presentation
	I. INTRODUCTION TO PARTS OF NATURE
Snake	This animal, like all living things, is dependent on nature in order to live. What is this animal? (snake). What is it he needs to live? The parts of nature that he needs are: Sun - to grow plants that he lives with and warm him Air - to breathe Water - to drink Plants and Animals - for food Land - to live on
	II. HABITATS
Chart #1 Marsh Habitat	A habitat is an animal's neighborhood. A neighborhood is an animal's home and the territory around it. An animal habitat includes the food the animal needs to eat and protection from his enemies.
	III. INTERRELATIONSHIPS
Chart #1 Picture	Here is a picture of three (3) different animals (a snake, a Great Blue Heron, and a frog). They all live in their habitat. What kind of habitat is this? (marsh).

Remember that other animals that live in the snake's neighborhood or habitat depend on having him around for food.

What might eat a snake? (eagle, owl, hawk). What would happen if there weren't any snakes?

Does anyone know what a snake eats? (frogs, bird eggs, insects, small mammals).

Plants and animals living together form communities and depend on each other to meet their needs. All plants and animals are important to make our world complete. Even animals like snakes which scare some people are important to have in our world.

IV. ADAPTATIONS

Mounted birds

An animal's body is generally well fitted or adapted to the place where it lives in order to get food it needs and escape it's enemies. How is the Great Blue Heron adapted to his habitat?

long legs - for wading in water

long bill - for catching fish

special feet - to walk in mud flats

feathers - warmth

wings - flight.

Chart #2

Woodland in Summer

Let's look at another animal neighborhood. What is the name of this habitat? (woodland). What kinds of animals live here? (deer, squirrels, insects, birds, rabbits, woodpecker).

A woodpecker is a bird of the woodland habitat. How is he adapted to his home?

feathers - warmth

wings - flight

special feet - to walk up and down trees

special bill - to eat insects on trees.

V. CHANGE

Chart #3

Woodland in Winter

All things in nature change. How do trees change in the fall? (leaves change color and fall off). Other examples of change might be sun in the sky and day and night.

Let's look at the woodland habitat in summer and winter.

How is this animal neighborhood different in winter?

- less leaves
- less noise
- fewer animals (hibernation)
- less food
- snow
- colder

Today we have seen that all living things are important to have in our world and that living things adapt to their environment in order to best find food and escape enemies. We have also seen how all living things change each day and with each season.

We will return tomorrow to study birds and to make bird feeders.

OUTLINE OF A GRADE TWO ACTIVITY

- BIRDS AND BIRD FEEDERS -

Understandings To Be Developed

- Nature is composed of land, air, water, plants, animals and energy.
- All living things are adapted to live in certain types of areas which are their habitats.
- All living things are interrelated with each other and their non-living environment.
- All living and non-living natural components change.

I. ADAPTATION OF BIRDS

Materials needed: Mounted birds

Inquiry: What do we know about birds?

Discussion: All birds are not the same. They are adapted to their environment in different ways:

- they look different
- they live in different habitats
- they eat different things
- they have different habits
- they build different homes.

II. RELATIONSHIPS

Inquiry: How do we change birds habitats?

Discussion:

A. We cut down trees which may drive some birds away.

B. We can put up feeders which will bring more birds to the community.

III. CONSTRUCTING FEEDERS

Inquiry: How do we know what kind of feeder to put out?

Discussion:

A. What birds are in the area?

1. What kind of nests can you find?
2. What kind of birds do you see?
3. What kind of birds live in your area? What kind of habitat do they have?

B. Different birds need different feeders.

1. Small seed eaters =
   a) smaller feeder
   b) more protection
2. Large seed eaters =
   a) large feeder
   b) less protection
3. Meat eaters =
   suet feeders
4. Special treats =
   a) fruit
   b) peanut butter

C. Different birds feed in different places.

1. Hanging feeders
2. Post feeders
3. Ground feeders

IV. PROJECT

The Maine State bird is the chickadee. It is a meat eater and a seed eater.

Make a paper cup suet feeder with a paper clip as a hanger.

Note: Keep feeders full ! ! !

Student's Name_____

Date_____

PreTest_____

PostTest_____

MAINE ENVIRONMENTAL EDUCATION PROJECT

Title III, ESEA, 306

GRADE TWO

PRE-POST TEST

SCORING

QUESTIONS

CONCEPTS

1. _____ (5)

Air (sky)___

Homes _____

Grass (plants)___

Water (clouds)___

Roads _____

1. Natural Environmental Components (slide of a neighborhood)

Which of the following are a part of nature?

2. _____ (1)

Frog _____

Great Blue Heron____

Duck _____

Chickadee _____

2. Characteristics of Natural Components (chart)

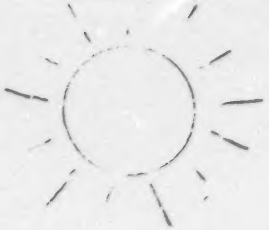
Point to the picture of the animal which does not live in the same habitat as the other animals.

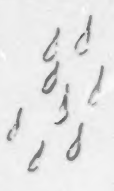
3. _____ (5)

3. Interrelationships of Natural Components

Which of the following do deer need in order to live?

___a. Sun ___b. Rain ___c. Trees ___d. Earth ___e. Ponds





4. _____ (5)

4. Changes of Natural Components (Slide)

When winter comes to this forest, what will happen:

a. _____ Fewer leaves or
_____ More leaves

b. _____ Fewer animals or
_____ More animals

c. _____ Less noise or
_____ More noise

d. _____ More food or
_____ Less food

e. _____ Busier animals or
_____ Sleepier animals

5. _____ (5)

5. Human Dependency on Nature

Which of the following do you think people need?

_____a. Sun _____d. Ocean

_____b. Rain _____e. Soil

_____c. Plants

6. _____ (6)

6. Human Needs and Environmental Components (slide)

What have people done in this neighborhood that makes it a better place to live?

Houses _____ Sidewalk _____

Grass _____ Road _____

Trees Utility Lines _____

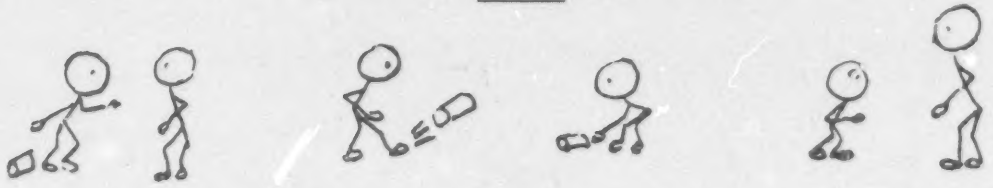
FEELINGS

7. _____ (3)

7. Toward Self (slide of a littered tin can)

You saw a person drop this can. Point to the picture which shows what you would do.

_____ _____ _____ _____
3 0 1 2



Ask the litterer to pick up the can | Kick the can | Pick the can up yourself | Tell a grown-up what you saw

8. _____ (2)

2 1 0

8. Toward Nature (slide of a snake)

Point to the face which shows how you feel about this picture.

9. _____ (2)

2 1 0

9. Toward Nature (slide of a marsh)

Point to the face which shows how you feel about this picture.

10. _____ (2)

2 1 0

10. Toward Nature (slide of a crayfish)

Point to the face which shows how you feel about this picture.

11. _____ (2)

11. Toward others

Someone has given some of the people in the neighborhood a lot of money for jungle gyms in their backyards. Your family will get one of these, Since not all families will get a jungle gym someone suggested that all the money be used to build a playground for all people in the neighborhood.

How do you think the money should be used;

_____For your family and the other families to build their own jungle gyms,

or

_____For a neighborhood playground for jungle gyms for all families to use.

12. _____ (2)

12. Toward Others

Someone has given all the people in the neighborhood enough money for everyone to build their own jungle gyms. Someone suggested that since new families will be coming into the neighborhood next year the money should be used for a playground for all people so new people will be able to use jungle gyms.

How do you think the money should be used:

_____To build jungle gyms for yourself and for your friends

_____To build a neighborhood playground for all people to use including new families which will come to live in the neighborhood next year.

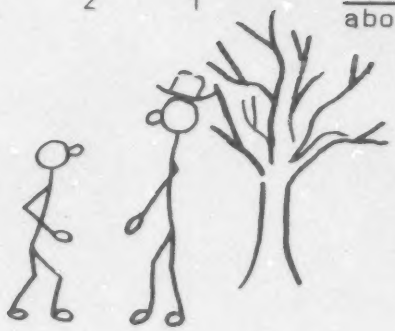
SKILLS

13. _____ (3)

13. Discovery-Inquiry (slide of a diseased elm tree)

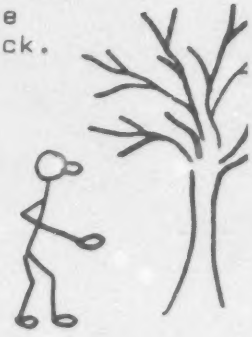
Here is a picture of a sick elm tree. Point to the picture which shows the best way for you to find out more about what has made this tree sick.

3 2 1



Talk to the Tree Warden

Look at pictures in a tree book



Look at the tree yourself

14. _____ (5)

14. Evaluating - Problem Identification (slide of a neglected neighborhood)

Which of the following would make the neighborhood a better place to be?

_____a. Clean up litter

_____b. Remove the sidewalk curb

_____c. Replace broken windows

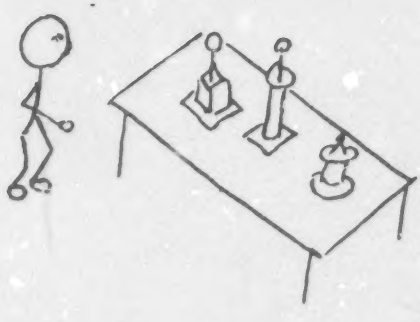
_____d. Make the signs larger

_____e. Paint building

15. _____ (3)

15. Problem Solving (slide of a local bird)

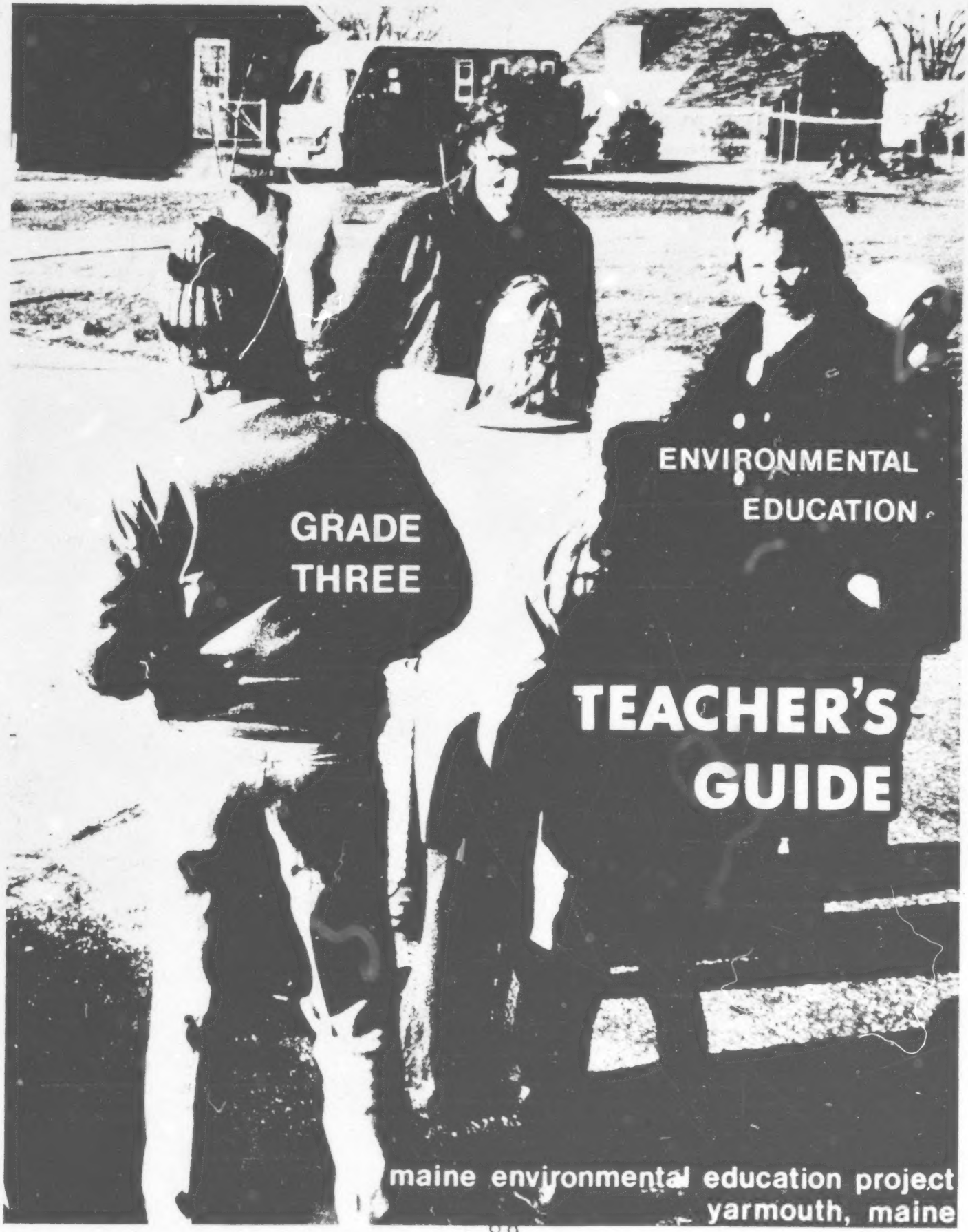
If you wanted more of this favorite bird around your school what would you do first? Second? Third?



a. Decide what kind of feeder the bird would like

b. Put out the bird feeder

c. Find out what the bird is


ENVIRONMENTAL
EDUCATION
GRADE
THREE
TEACHER'S
GUIDE
maine environmental education project
yarmouth, maine

Study Environment:

THE NEIGHBORHOOD

The neighborhood environment plays a large role in the development of a child. It is close to him. Many impressionable events occur here and remain through the rest of the child's life.

A neighborhood which is well designed, beautiful, and possesses pleasingly varied natural and man-made features can do much toward enriching life and reinforcing the proper attitudes about the environment and its quality.

Since it is not remote it is a place where students can have first-hand experiences and a place where teachers can interact with the students to instill a personal sense of pride in the home and its surroundings.

In grade two and three an environmental education program can move away from the school and focus on the environmental elements which comprise the neighborhood. It can also look at the problems and, just as importantly, the opportunities for improvement which exist. In many cases, the children can become directly involved.

CONCEPTS FOR GRADE THREE

1. Nature is composed of land, air, water, plants, animals and energy (sun).

2. All living things are adapted to live in certain types of areas which are their habitats.

3. All living things are interrelated with each other and the non-living environment.

4. All living and non-living natural components change.

5. People depend on nature ultimately to fulfill their needs.

6. Human neighborhoods, past and present, reflect human physical, psychological, and social needs and wants and what man has done to meet these needs and wants.

7. Human neighborhoods demonstrate how people can create both useful and harmful conditions.

A GRADE THREE CLASSROOM PRESENTATION

- THE DEVELOPMENT OF NEIGHBORHOODS -

Understandings To Be Developed

- Nature is composed of land, air, water, plants, animals and energy (sun).
- All living things are adapted to live in certain types of areas which are their habitats.
- All living things are interrelated with each other and the non-living environment.
- All living and non-living natural components change.
- People depend on nature ultimately to fulfill their needs.
- Human neighborhoods, past and present, reflect human physical, psychological and social needs and wants and what man has done to meet these needs and wants.
- Human neighborhoods demonstrate how people can create both useful and harmful conditions.

Presentation

I. INTRODUCTION TO THE NEIGHBORHOOD (slides)

All animals, including people, need a habitat or home in order to meet their needs. What are the things that we need to stay alive? We need food which comes from plants and animals. We need land where we can build our houses and grow our crops. We need water to drink, air to breathe and the sun's energy to warm our bodies and grow our food.

II. EARLY HUMAN SETTLEMENT (slides)

Early settlers came to a place where few people had ever been, a wholly natural environment. They had to fit themselves into this environment in a way that would satisfy their survival needs. When looking for a place to settle they looked for things that they needed like clean water, sturdy trees to provide lumber for their houses and for fuel (pine, spruce), plenty of wildlife for food, land suitable for growing crops, and a place that would provide protection from wind, weather and enemies.

People have always depended on each other to help satisfy their physical, psychological and social needs. From the earliest days to the present, people have always preferred to be and live close to each other. Early communities tended to be built in clusters for sharing of work, social activities and protection.

Life was difficult in early times because people had not invented many of the time and energy savers that we have today. A home at this time would have been simple and crude, built by the people who lived in it and their neighbors in a house raising or "building bee." It would have had its own garden and a shelter for livestock, and its own water supply. Heat would have come from a large fireplace where all the cooking was also done. There was not much space inside these early homes because people didn't own many things. In order to keep the houses warm few windows were used, the rooms were small and ceilings were low. They were stuffy, smelly, and dark. Toilet facilities were crude - usually out-houses that were built some distance from the main house. Everyone worked hard including the children who, when not doing chores, went to school in one-room school houses where there wasn't much to work with and discipline was very strict.

III. HUMAN SETTLEMENT TODAY

In spite of the many changes in our way of life, people still have the same basic needs today that they did in the past. We still need <u>water</u>, <u>air</u>, and the <u>sun's</u> energy. We still need <u>land</u> for growing <u>plants</u> and building shelters and other <u>animals</u> for food. One of the big differences in the way we live now is that we don't have to provide all these things for ourselves. Modern technology and industry has provided us with new types of energy like electricity, more efficient fuel for heating, faster and more efficient transportation and communication, stores for food and clothes, electric washers and dryers and countless other time savers. How much time do you think it took for people in the olden days to do their washing? How much time do you think it took to get from here to Boston?

We have more choices today about where we live because we don't have to provide for all of our needs ourselves. We can live in rural, suburban or urban neighborhoods.

Rural living appeals to people who want to have open space around them for outdoor work and recreation and for living close to nature. People who live in rural areas need to travel greater distances for goods and services and some utilities are not as readily available as they are in cities. A rural home usually has some land around it, it may have a barn and a garden, it would need its own well, and waste disposal would have to be done through a septic system. It would have some natural habitats nearby. Because there is no problem with crowding in

rural areas houses can be bigger if people want them to be.

Suburban neighborhoods have some of the openness of rural living along with easier access to stores, hospitals, banks, businesses and utilities. A suburban home usually has less space around it than a rural one because it is build fairly close to other homes. It has a yard and probably some recreational equipment. It may have its own well and septic system, but more likely uses municipal water and sewage facilities.

Urban or city neighborhoods are densely settled and allow people to live close to their work and all the man-made things they might need or want. Cities are busy, active places filled with people. Some of the problems created by this type of living are: air, water and noise pollution, lack of plant and animal life and crowding. An urban home might be in an apartment in a building that is shared with other families. Most apartment houses are owned by landlords and not by the people who live there. This can be very helpful for people who are not able to take care of their house and would prefer to pay rent to the owner and have him be responsible for the condition of the building. Sometimes, landlords are not concerned enough about the buildings they own and this can cause problems for the people who live in them. Outdoor activities must be done elsewhere - usually areas are set aside for parks.

We have talked about a rural, a suburban and an urban neighborhood today. Each has its own problems which arise. What are some of these problems? Litter, uncared for property, bare, eroded areas, clogged sewer drains, sick and damaged trees, crowding, noise, traffic. What can be done about these problems? Example - become a leader of a litter clean-up group for your neighborhood. It's up to you and me to show our concern and help. Only with proper planning and citizen cooperation and caring can we create pleasant and desirable neighborhoods.

Tomorrow we will be going on a bus field trip to a rural, suburban and apartment (urban) neighborhood. We will be in small groups with a leader who will help point out the useful and harmful parts of our neighborhoods.

On the field trip, look for dead leaves and trees. Notice different ways people treat them. What is the best way to use dead leaves? To burn them (air pollution), to throw them away (waste) or to compost them for fertilizer!

What are dead trees good for? (Homes for many animals). Should they be left in the woods? (Yes, unless endangering human welfare).

I hope you will feel happier toward dead leaves and trees in the future for they play an important role in the nature of life.

A GRADE THREE FIELD TRIP

- IN THE NEIGHBORHOOD -

Understandings To Be Developed

- All living things are adapted to live in certain types of areas which are their habitats.
- Human neighborhoods, past and present, reflect human physical, psychological and social needs and wants and what man has done to meet these needs and wants.
- Human neighborhoods demonstrate how people can create both useful and harmful conditions.

Plan a walk through the neighborhood around your school. On this walk you can observe and discuss the following:

THE HUMAN ENVIRONMENT

1. Human Settlement

People can choose to live in the neighborhood that best meets their wants. For example:

RURAL = more open space, further from conveniences

SUBURBAN = closer to conveniences, yet still with open areas

URBAN (apartment) = close living, nearer to stores and work, save time and transportation, close to theater, art galleries, etc.

Problems associated with human settlements:

litter	crowding	traffic
noise	air pollution	solid waste disposal

water pollution from waste water.

2. Transportation and Circulation

Transportation has changed with time from horses to trains, automobiles, buses and planes. Today we have a need for road signs, gas stations, sidewalks and highways. Cars use much fuel and create air pollution. People should walk more, ride bikes and use mass transit, like buses.

3. Community Services and Utilities

People in the past had to do everything for themselves. Today we have many utilities (telephone, electricity, fire hydrants, water towers, street drains, street lights) to help make our environment safer, healthier, and more convenient. We also have community services like mail delivery, stores, water supply, sewage treatment and medical care to make life much easier than it used to be.

4. Recreation

The way we live today gives us more leisure time for recreation. We need parks, playgrounds and recreational facilities to enable us to meet our needs.

5. Production Areas

This includes the planting of neighborhood trees, gardens, local factories and businesses.

6. Open Space

It is important to have open areas in our neighborhoods where animals can make their homes and people can enjoy nature's beauty and peacefulness.

THE NATURAL ENVIRONMENT OF THE NEIGHBORHOOD

1. Plants

We need plants for food, clothing, oxygen, beauty and shade. Dead plants are useful, too. For example, we can compost leaves instead of burning them which causes air pollution. Composted leaves can be used for fertilizer or as mulch for gardens. A gardening expert could give you helpful information about using dead leaves in this way.

Dead trees provide homes for animals (insects, birds, mammals) and decompose to make our soil richer. They are important to our environment and should not be destroyed.

2. Animals

Try to find evidence of animals (bird nests, holes in trees and in the ground). Talk about where animals are in the winter. Animals must live where their needs are met. Dead trees provide homes for many animals.

3. Water

Discuse the uses of water in neighborhoods, for example, fire hydrants, sprinklers, uses in homes, etc. Discuss the necessity of clouds and rain.

4. Land

Notice whether the terrain is flat or hilly. Check for erosion. Also, mention the use of rock in home foundations and the need for good land and soil.

5. Air

Discuss the importance of clean air. Point out that incinerators, cars, burning leaves and smoke from chimneys cause dirty air.

6. Energy

The sun is part of nature and is necessary for life. The amount that reaches the earth varies during the day and through the seasons.

Remember to Point Out:

1. Things that are a part of nature.

2. How we can improve our neighborhoods and what things people have done to make this neighborhood better.

3. People must show concern for other people and their environment if we want to make our world a better place to be.

AN OUTLINE OF A GRADE THREE CLASSROOM PRESENTATION

- INDIVIDUAL VALUES AND THE NEIGHBORHOOD -

Understandings To Be Developed

- Nature is composed of land, air, water, plants, animals and energy (sun).
- People depend on nature ultimately to fulfill their needs.
- Human neighborhoods, past and present, reflect human physical, psychological and social needs and wants and what man has done to meet these needs and wants.
- Human neighborhoods demonstrate how people can create both useful and harmful conditions.

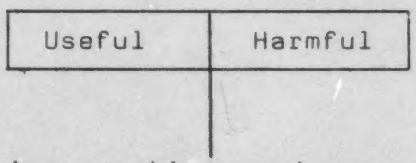
I. COMPARING THE ATTRIBUTES OF NEIGHBORHOODS (rural, suburban, urban):

Obtain a picture of a rural, suburban and urban environment and for each picture ask the students:

1. What do you like about the picture?
2. What don't you like about the picture?
3. Identify any problems that you see in the picture.
4. Are all of peoples' survival needs found in nature in each picture? (Air, water, sun, land, plants, animals)?'

II. IDENTIFYING USEFUL AND HARMFUL COMPONENTS IN THE NEIGHBORHOOD

Make a chart titled "Parts of a Neighborhood." Divide it into two categories as below:



Ask the following questions and record the answers on the chart:

III. IDENTIFYING SURVIVAL VERSUS HAPPINESS NEEDS

Make a poster board as below with slits to hold answer cards:

Survival Needs	Happiness Needs
⌊ ⌋	⌊ ⌋
⌊ ⌋	⌊ ⌋
⌊ ⌋	⌊ ⌋

Construct "Survival Needs" answer cards:

air	water	sun	shelter
animals	plants	land	protection

and

"Happiness Needs" answer cards:

sports	car	boat	ice cream
television	stereo	cowboy boots	

These should be presented, one by one, debated in open discussion, and placed in the proper column upon agreement where each belongs.

IV. CLARIFYING GENERAL VALUES RELATING TO ENVIRONMENT BY VOTING

Ask the students to raise their hands in response to the following questions and have them explain their responses:

1. Do you like the neighborhood you live in?
2. Would you like to live in a different neighborhood?
3. Would you like to live in a big city someday?
4. Would you like to live on a farm?
5. Do you think dead trees are ugly and should be removed?

6. Do you feel that dead trees are an important part of our environment?

7. Would you organize a group of friends to help clean up an area in your neighborhood?

8. Would you litter if there wasn't a trash can nearby?

9. Would you walk or ride a bicycle to school instead of being driven?

10. Would you turn out a light when you leave a room to save energy for others?

AN OUTLINE OF A THIRD GRADE ACTIVITY

- SITE IMPROVEMENT -

Understandings To Be Developed

- Human neighborhoods, past and present, reflect human physical, psychological and social needs and wants and what man has done to meet these needs and wants.

IMPROVING THE SCHOOL SITE FOR RECREATION by Pat Driscoll

The following is a suggested problem-solving activity. The format is designed to complement the problem-solving process.

Behavioral Objectives	Activities	Teaching Aids
The student will be able to:		
1. Identify, describe and list # problems of recreation on the school site.	1. Take a walk around the play area noting # improvement areas in terms of recreation. - Have students make a mural of their play area before improvement.	1. Paint, mural paper, pencils, paper, board, chalk.
2. Find # different ways of improving the recreation area of the school.	2. Have the children bring in magazines and cut out pictures of playgrounds or things they would like to see on their playground, i.e., tires, culverts, balance beam, painting board, all types of gym equipment, swings, climbing equipment.	2. Magazines, scizzors, crayons, paper, pencils, tacks, bulletin board.

	- Drawing of the "Perfect Playground." - Make a bulletin board of these things.	
3. Discover and relate other people's solutions to better recreation on a school site.	3. A trip to other school sites may help them to realize different ways to solve their problems. - If there has been an improvement recently at a certain school site, a speaker could relate the solution to the children. (Landscape architect)	3. Notepaper, pencils.
4. Describe _#_ different alternatives in terms of effort, ability, feasibility and affects.	4. Discuss with the children the different courses of action; find out what the costs would be; what permission is needed; how long it would take; how hard it would be.	4. Board and chalk, pencils and paper.
5. Select one plan of action to solving the recreational problems.	5. Vote: balloting, campaigning, speeches. Poster contests, etc.	5. Poster paper, poster paints, pencils and paper, etc.
6. Organize a plan of action for better recreation facilities.	6. Get permission - Get money - Bring in materials - Divide into groups - Set time schedule - Delegate duties.	6. Paper and pencils, tires, wood, culverts, rope, hammer and nails, etc.

7. Complete plan as devised for better recreation on the school site.	7. Following carefully the time schedule, see that duties are carried through. - With the necessary help, have the equipment placed in preplanned spots and have old equipment moved or not.	7. Paper and pencils, tires, wood, culverts, rope, hammer and nails, etc.
8. Evaluate success of the plan for better recreation on the play area.	8. Survey the student body as to use, likes and dislikes, suggestions for improvement.	8. Pencils and paper.
9. Decide whether or not a new plan should be adopted or additions should be made to the original plan.	9. Promote other student body members to help in monitoring. - Discuss success.	9. Pencils, paper, chalk and board.

Student's Name_____

Date_____

PreTest_____

PostTest_____

MAINE ENVIRONMENTAL EDUCATION PROJECT

Title III, ESEA, 306

GRADE THREE

PRE-POST TEST

SCORING	QUESTIONS
	CONCEPTS
1. _____ (4) Air(sky)___ Water_____ Plants_____ Energy (sun)_____	1. Natural Environmental Components (slide of an urban area) What things in this picture are a part of nature?
2. _____ (5) Bobcat_____ Owl _____ Rat _____ Beaver_____ Sparrow____	2. Characteristics of Natural Components (chart) Which of these animals prefer to live near people?
3. _____ (4) Sun _____ Soil _____ Trees_____ Parks_____	3. Interrelationships of Natural Components (slide of a pigeon) Which of the following does a pigeon need in order to live?

4. _____ (1)

Nothing_____

Increase in number_____

Decrease in number_____

4. Changes of Natural Components (seagull slide)

What do you think will happen to other sea birds when the seagull population increases?

5. _____ (8)

1._____
2._____
3._____
4._____
5._____
6._____
7._____
8._____

5. Human Dependency on Nature (slide of an old neighborhood)

What did the early settlers need in their neighborhood in order to survive?

6. _____ (6)

1._____
2._____
3._____
4._____
5._____
6._____

6. Human Needs and Environmental Components (slide of a neighborhood)

This is a neighborhood of today. What have people done to make this neighborhood a useful and a better place to live?

FEELINGS

7. _____ (2)

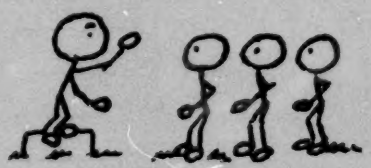
___ ___ ___
0 1 2

7. Toward Self (slide of litter)

Your neighborhood is covered with litter. You do not like the litter. What would you do?

a. Nothing

b. Pick it up yourself



c. Become the leader of a litter pick-up group.

8. _____ (4)

4 3 2 1 0

8. Toward Nature (a dead leaf)

Point to the face which shows how you feel about this leaf.

9. _____ (4)

4 3 2 1 0

9. Toward Nature (slide of a dead tree)

Point to the face which shows how you feel about the object in this picture.

10. _____(2)

2 1 0

10. Toward Others

When leaving the room, you should turn the light out because: (Rank the answers below in order of preference - first, second, third)

___a. it saves you money

___b. it saves energy so that others will have enough

___c. it keeps the house from becoming too warm

11. _____ (2)

2 1 0

11. Toward Others

If you had a sidewalk, you would want to shovel it because: (Rank the answers below in order of preference - first, second, third)

___a. you want to keep your feet dry

___b. you want others to walk safely past your home

___c. you want the mail delivered to your home

SKILLS

12. _____ (1)

___ ___ ___
a b c

12. Discovery-Inquiry (slide of a yard full of dead leaves)

Point to the picture which shows the best way for you to find out how to put these leaves to their best use.

a. Read a book

b. Talk to someone who knows about gardening

c. Look at the leaves

13. _____ (5)

1. _____
2. _____
3. _____
4. _____
5. _____

13. Evaluation-Problem Identification (slide of a neglected neighborhood)

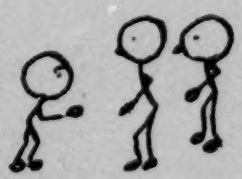
What would make this neighborhood a better place to be?

14. _____ (3)

___ ___ ___
a b c

14. Problem Solving

You are concerned about saving water in your home. What would you do first, second and third?

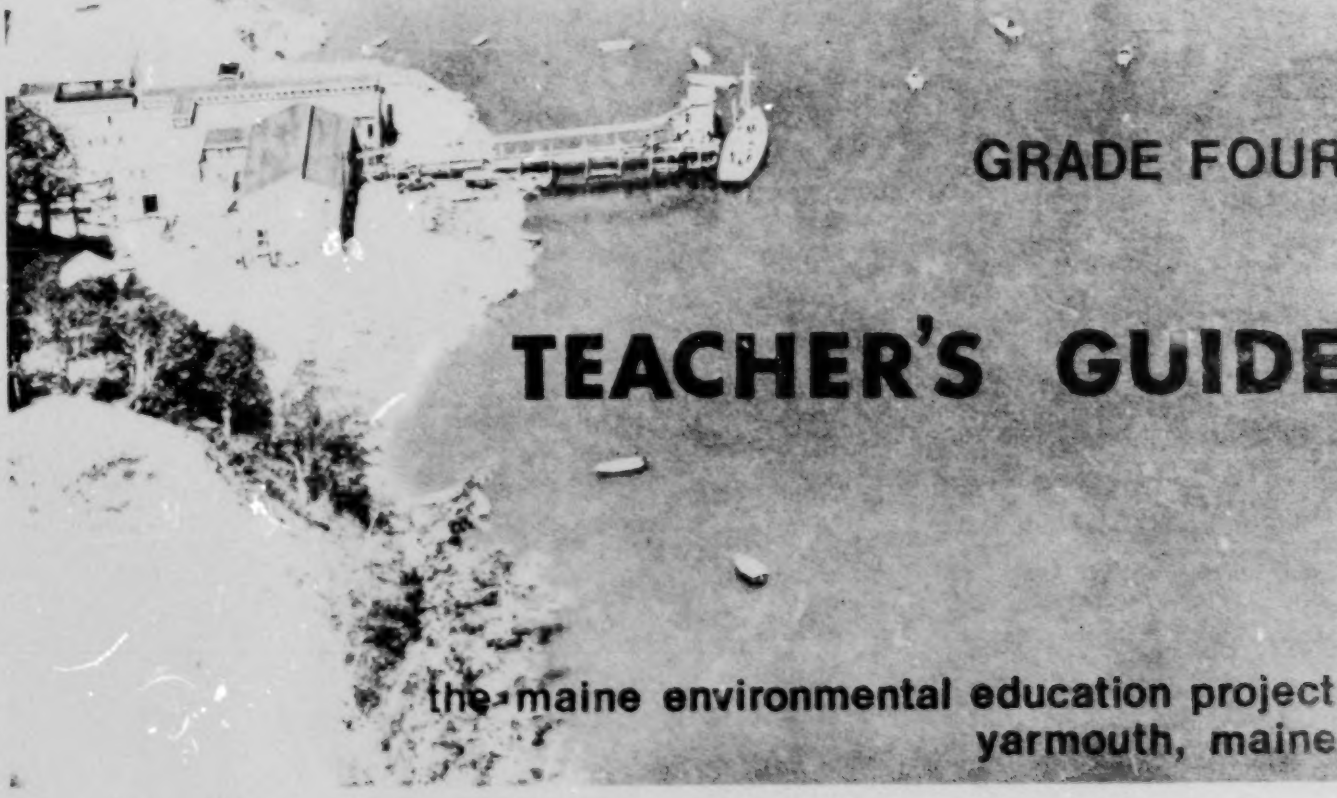


a. Tell your family what you have found.

b. Find out how much water you are wasting.

c. Decide what is the best way to save water.

ENVIRONMENTAL EDUCATION



GRADE FOUR

TEACHER'S GUIDE

the maine environmental education project
yarmouth, maine

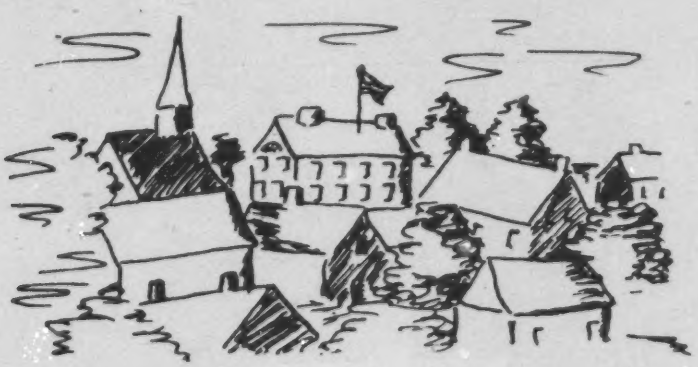
Study Environment:

THE COMMUNITY

A community is a place where people live and work and play. It is a place where people come together to share their skills, exchange ideas, and look with hope to improve their lot, way of life, and environment.

Communities developed at particular locations due to natural features or physical elements in combination with human endeavors. Among those factors influencing the location of communities are natural features, raw materials, trade centers, and transportation crossroads. Some communities happened naturally, and others were planned. Communities or parts of them have grown as a result of population increase, transportation systems, new services, physical features, industrial development, and other influences. All communities have changed - some for the better and others for the worse. Too often these changes have not been anticipated or effectively dealt with. Citizens need to be educated to deal with community problems when they occur and, even more importantly, before they occur through sound community planning.

It is in community planning and betterment that one can find exciting opportunities for creating student interst and involvement. And it is in grades four and five that students can become exposed to those areas of community improvement for which they, themselves, have expressed concern.



CONCEPTS FOR GRADE FOUR

1. A natural community consists of the living components (plants and animals) in an area.

2. All living components of a community are inter-related with each other and the non-living components (land, air, energy/sun and water).

3. The living and non-living natural components of the environment are constantly going through regular patterns of change.

4. Within a natural community matter is continually re-used and changes from one form to another.

5. Within a natural community plants capture the sun's energy which is then made available for other living things.

6. All the communities on earth, together with the non-living parts of the environment, form a closed system.

7. People depend on nature ultimately to fulfill their needs.

8. Human communities, past and present, reflect human physical, psychological and social needs and how people use the environment to meet these needs.

9. Human communities demonstrate how people can create both useful and harmful conditions.

10. Human beings set up institutions to meet their needs effectively.

11. Human beings develop and apply technology which uses natural components to produce human communities.

12. Natural resources are natural components which are useful to man.

Activity One

A GRADE FOUR CLASSROOM PRESENTATION

- THE COMMUNITY -

Directions:

This slide show script is designed to give the students a broad overview of natural and human communities. Slides should be selected to illustrate the points made in the script and to focus on local conditions. Questions provide for discussion opportunities and more will likely occur. This activity serves as a knowledge base and a preparation for the field trip.

Concepts To Be Developed

- A natural community consists of the living components in an area. (plants, animals)
- Human communities, past and present, reflect human physical, psychological and social needs and how people use the environment to meet these needs.
- Human communities demonstrate how people can create both useful and harmful conditions.
- Human beings set up institutions to more effectively meet their needs.
- Human beings develop and apply technology which utilizes natural components to produce human communities.
- Natural resources are natural components which are useful to man.

Presentation (Slide Show Script)

I. INTRODUCTION TO THE COMMUNITY

A natural community is made up of the plants and animals in a given area. For example, a woodland community would include all the plants (trees,

shrubs, flowers, etc.) and animals which are found in that woodland. Other common communities include marshes, meadows, ponds, and deserts. Each has its own kinds of plants and animals although some may live in more than one kind of community. This does not mean that communities can live only with plants and animals around. These plants and animals need the non-living environment in order to survive. The non-living environment would include the land around them, the air, water and the energy of the sun. We could say that the living and non-living are inter-related.

In the natural community it is the plants which capture the energy of the sun and make this energy available for the animals of the community. Without this energy nothing could live. Animals get this energy by eating the plants. They also receive the material that the plant is made from and can use it for their own bodies. But in natural communities nothing stays the same. Plants and animals are continually growing and dying. The matter from which they are made returns to the ground and is available for future use by other plants. This constant change and re-use of materials is called <u>cycling</u>.

All of the communities of the world together with all the non-living parts of the environment make a <u>closed system</u>. This means that no matter is being added to the earth and that the communities of the earth must exist with the amount of land, air and water that exists now.

People also live in communities. Our town is considered to be a community. Why do you think

people move to a particular community? Some reasons might be:

- to be close to work,
- to be in an area they enjoy,
- because of the landscape, the weather, or
- good recreational opportunities.

II. HOW A COMMUNITY DEVELOPED

Our forefathers, the early settlers in our community, must have liked this place, too. Most of them arrived here by boat and probably landed here in a place sheltered from the pounding waves and winds. Sometimes these settlers went up rivers and built their homes on the river banks. Rivers provided water for use in the home, power to turn water-wheels which turned saws to cut lumber and drove gristmills that ground grain, and transportation to inland forests and land for farming. Rivers also provided fish and other useful wildlife.

The early settlers cleared the land for fields and gardens because many were farmers. The trees were used for building homes, stables, furniture, and other useful things. The people often lived close to each other for protection, and so they could help each other. Some people lived near the coast and fished for a living; others farmed inland; and still others ran mills, were carpenters, and ship builders. Gradually trails developed between the settlements. Some were made by farm cattle and others by people walking or on horseback. People sometimes traveled to settlements to trade goods in exchange for things they needed.

The townspeople would hold meetings and decide how to best run their community. They would choose some members of the community to run the business of

the town, including looking after the poor, repairing roads, enforcing the law, operating schools, and protecting the community against fire. The people in the town paid out part of their earnings in taxes to help pay for these things.

Advances in technology (machines and methods for developing products from natural resources) over the years have made it possible for people to have new things. For example, they learned how to make automobiles and better roads. There were more jobs for people, and more people came to communities to work. Many villages grew into larger towns and cities.

III. THE COMMUNITY TODAY

Today our communities have changed in many ways. Most of them have a center for business. This is a place where roads bring together the people who produce, buy and sell goods and services. Stores, truck and bus terminals, theaters, government buildings, restaurants and businesses of all kinds are found here. Sidewalks allow people to move easily from place to place without danger from the heavy traffic. Electric, gas, telephone and other lines provide power and communication in and out of the community. Parks, play areas, shaded walkways and special recreation areas are developed in many communities for the enjoyment of residents and visitors. Other areas may include industrial parks where products are made and residential areas where people live in more quiet surroundings.

Today, we also find new shopping malls on the outside town. The suburban shopping malls attract many people because of the convenient access, parking and closeness to their homes.

IV. OPPORTUNITIES TO IMPROVE THE COMMUNITY

Communities are for people - like you, your families and your friends. They are places where each of us can get jobs, buy the things we need and enjoy ourselves. Every person is important in a community. Each of us should do our part to keep our community a good place in which to live. What are some of the things you like about our community? Are there some things which could be done to make our community better?

A community contains many roads for the movement of cars and trucks. These have to be kept in good repair. Buildings also need to be kept painted, cleaned and repaired. Along the streets, trees must be cared for too. With so many moving cars and other vehicles, smoke and fumes, shade from large buildings, tar and cement covering their roots, trees often have a hard time growing. They frequently suffer from disease and injury unless they are cared for. Sometimes their branches must be cut to let overhead wires pass through them. Some communities are putting utility lines under the ground so they will not mar the beauty of the community or interfere with trees and buildings. With no overhead wires, street lights can be placed on specially designed poles which are not as ugly. Good lighting is very important in helping people move safely at night. Some streets do not have enough lighting.

Sidewalks also help people to move safely. Sometimes the sidewalks which do exist are not kept in good condition or cleaned. People who don't care often throw litter and trash along the sidewalks and streets. Litter causes health problems by attracting animal pests such as rats, seagulls and pigeons. Litter can also be a fire hazard, an

eyesore and a menace to people and automobiles.

Sometimes walkways are made through parks which have grassy areas and trees, shrubs and flowers. Many communities have a pretty waterfront on a river, lake or the ocean. If this is kept clean, and if roads are available to allow people to get to the water, they can go boating, swimming, fishing or just enjoy themselves. A good waterfront can help to make a community a nice place to be.

V. OUR FIELD TRIP

We will take a trip on a bus around our community to see different parts of it. We will get off the bus at different places and look more closely at some of the things we have talked about. Although we live here, there are still many things that we can learn about our community.

Activity Two

A GRADE FOUR FIELD TRIP

- THE COMMUNITY -

Directions:

It is the purpose of any field trip to give first-hand experiences. These experiences can contribute to the development of concepts, feelings, and skills.

Prior to taking the trip, identify the places and objects in the community which you will be discussing and observing on the trip. The following outline suggests things to look at on a community field trip and teaching ideas. A map of the field trip route and stops will be helpful. Most town offices have available small maps of the community. Portable speakers allow interpretation of some features while the bus is moving.

Section III, "Other Helpful Information," includes additional information on taking successful field trips.

Concepts To Be Developed

- People depend on nature ultimately to fulfill their needs.
- Human communities, past and present, reflect human physical, psychological and social needs and how people use the environment to meet these needs.
- Human communities demonstrate how people can create both useful and harmful conditions.
- Human beings set up institutions to meet their needs effectively.
- Human beings develop and apply technology which uses natural components to produce human communities.
- Natural resources are natural components which are useful to man.

Field Trip

Following are specific places and objects which lend themselves to interpretation and a greater understanding of the community. Beside each category of places are suggested ideas for discussion. These may be modified to relate to your own situation.

THE HUMAN ENVIRONMENT

Places and Objects	Teaching Ideas
1. Human Settlement -Residential Areas -Housing Developments -Historical Locations	1. Discuss why people live in their community. People form communities in places that best suit their needs. Some things that influence peoples choices about where to live are: climate, job availability, and suitability of land for various work and recreational activities. Discuss the problems associated with human settlement such as: litter, crowding, traffic, noise, air pollution, solid waste disposal, water pollution, land erosion, and exhaustion of natural resources.
2. Transportation & Circulation -Streets -Sidewalks -Parking Areas -Major Arteries	2. Changes in methods of transportation (more cars, trucks, less mass transportation) have resulted in the need for more roads, sidewalks, signs and gas stations. Solicit some of the problems caused by our modern, more efficient types of transportation (eg., excessive consumption of fuel, air pollution, noise, safety problems).
3. Community Services and Utilities -Water -Sewage	3. Communities provide for their residents many things which people in the past had to get for themsolves, such as water supply, waste disposal, lighting and roads. We also have such

-Fire Protection

-Solid Waste Disposal

community services as mail delivery, fire protection, ambulance service and road construction and repair. To cover the cost of these community services and utilities, people must pay taxes to the town.

4. Community Institutions

-Town Office Buildings

-Schools

-Churches

-Libraries

4. Education is one of the most important provisions in any community. Even in the earliest communities a school was set up as soon as possible. Our schools today are far more complex than early schools. A part of the tax money which people pay to the town is used to cover the cost of schools and teachers. Another important community institution is its governing body. This consists of officials who run the town, such as a mayor, town manager and council members. A police department is necessary in any community and some towns and cities have correctional institutions in them. Libraries also fill human needs in the community. The location of institutions in the community is very important. The architectural style of public buildings may also be important in reflecting the character of the community.

5. Recreation

-Parks

-Playgrounds

-Tennis Courts

5. Our life today allows us more leisure time than people had in the past. We enjoy having recreational areas and facilities in our community. Municipal parks, playgrounds, swimming pools, tennis courts and skating rinks are examples of these. Considerations in planning these facilities include: location, accessibility, need, population served and cost of upkeep.

6. Production Areas -Industrial Parks -Farms -Commercial Forests -Power Plants -Mines	6. We live in an age in which people have the knowledge and skill to produce almost anything they need or want. Machines and factories have been created for this purpose. Most communities have places where modern technology can be seen at work. Some examples of these are power generation plants, factories which produce furniture, clothing, shoes, paper, plastic products and appliances, farms, mines and commercial forests. Problems associated with production and technology include air and water pollution, solid waste disposal, noise, damage of the land, safety and exhaustion of natural resources.
7. Open Space -Vacant Lots -Wetlands -Flood Plains -Wooded Areas -Open Meadows	7. It is important to have open areas in our communities. Such areas provide wildlife habitats, buffer zones between conflicting land uses and places for study and enjoyment.

THE NATURAL ENVIRONMENT

1. Plants -Shade Trees -Landscaping Plants -Unique Specimens -Diseased Trees	1. We need plants for food, clothing, oxygen, beauty and shade. Plant values include farming, street and yard beautification, wildlife habitat, trees for homes and shopping centers and lumber.
2. Animals -Wildlife Habitat Areas Wetlands Nesting trees Feeding areas	2. Animals are important for food and for maintaining a balance in nature. Many people find pleasure in observing and photographing animals. Each animal species is adapted

-Animal Crossings		to the environment in which it lives. In any human settlement it is imperative to insure that proper habitats are kept for animal life.
3. <u>Water</u> -Oceans -Lakes -Streams -Bogs and Marshes -Springs	3.	We need water for drinking growing food, cooking, washing and cleaning, waste disposal, industry, cooling, transportation, power generation, wildlife and recreation. Although 2/3 of our world is composed of water, it is limited in supply and its quality must remain high. Also, all life contains more than 90% water in its cells and these cells must be replenished with clean water continually. In many places man has abused his water supply. Future generations must protect their water supply to insure quality life for themselves. Unwise water uses include sewage dumping, industrial pollution, draining and filling in of wildlife habitats. Some solutions to common problems include sewage treatment, water purification, wise land-use planning and home water conservation.
4. <u>Land</u> -Road Cuts -Outcroppings -Terrain -Glacial evidences	4.	We need land for growing food, providing shelter and supporting all forms of life that provide us with our needs and our wants. Land is composed of rocks, minerals and soils. It varies in its ability to support life, in its topography and its drainage capacity from place to place. People must be sensitive to the differences in land suitability and quality before they decide to alter natural land forms. If proper care is taken in development of the land, fragile areas and wildlife habitats can be protected.

In each community road cuts, rock outcroppings, the terrain and evidences of glaciers provide opportunities for investigation.

5. Air

- -Cloud Formations
- -Air Clarity
- -Inversion Areas
- -Fog Areas

5. Each community has air-related phenomena such as cloud formations, air clarity, inversion areas and fog areas which can be observed and discussed on a field trip.

We need air for oxygen, carbon dioxide, nitrogen, wind power, precipitation of fresh water, temperature control, etc.

Air quality is influenced by human behavior. Air quality protection laws are necessary to prevent institutions, such as schools and government, and technology, such as industry and automobiles, from polluting our air. Individuals can help by supporting air quality measures which prevent open dumping and provide for emission controls on smoke stacks, incinerators and automobiles.

6. Energy

- -Sunlight
- -Temperature
- -Sources of Sound
- -Wind Effects

6. All living things need energy from the sun in order to live. The sun provides energy for plants to manufacture food. People are also dependent on the control and use of energy, such as sound, light and heat.

Energy supply, in the form of fossil fuels, such as coal and oil, is limited in supply and must be used wisely. We use fuels to heat our homes and other buildings, for transportation and for generation of light and sound (electricity). We can preserve our limited fossil fuels by proper insulation of our buildings and by being conservative in our use of transportation and electricity.

Activity Three

A GRADE FOUR

ENVIRONMENTAL EVALUATION ACTIVITY

Directions:

It is the purpose of this activity to develop criteria for evaluating the stability of the natural ecosystem and the extent to which the environment meets human physical needs. Students must make judgments based upon their own values as to how well the environment meets these criteria. In such a process the students will identify opportunities to improve their environment.

Concepts To Be Developed

- People depend on nature ultimately to fulfill their needs.
- Human communities, past and present, reflect human physical, psychological, and social needs and how people use the environment to meet these needs.
- Human communities demonstrate how people can create both useful and harmful conditions.

Discussion and Field Evaluation

A. Discussion

Prior to on-site evaluation, it is necessary to discuss with the students the criteria for evaluating their environment. The following outline provides questions for helping students to arrive at these criteria. Using the chalkboard, a question and answer format might be the best approach.

1. Criteria for evaluating the quality of the NATURAL ENVIRONMENT.

Discussion Question:

What do you think makes the natural environment healthy?

Answer (Criteria to be brought out):

1) A variety of natural areas
2) A diversity of plant and animal species
3) The presence of fertile soil
4) Balanced populations for each species

2. Criteria for evaluating how well the environment meets HUMAN PHYSICAL needs.

Discussion Questions:

How can the human environment meet our physical needs?

Answer (Criteria to be brought out):

It must be:

1) Useful
2) Safe
3) Healthy
4) Lasting

3. Criteria for evaluating how the environment meets HUMAN PSYCHOLOGICAL needs.

Discussion Question:

How can the human environment make us feel better?

Answer (Criteria to be brought out):

It must:

1) Be orderly
2) Have harmony of parts
3) Have permanence
4) Have places set aside for privacy
5) Be aesthetic (pretty)
6) Have areas for play
7) Contain variety
8) Have opportunities for investigation and learning

4. Criteria for evaluating how the environment meets HUMAN SOCIAL needs.

Discussion Question:

How can the human environment help people to get along better?

Answer (Criteria to be brought out):

It should:

1) Provide places for people to get together
2) Offer opportunities for people to perform and demonstrate their talents
3) Offer opportunities for people to compete

B. Field Evaluation

Through the previous activity the students developed criteria for evaluating the environment in four areas of need. During this activity students will use the criteria to evaluate a study environment, such as the school site. It is suggested that students in grade four work with or apply the criteria brought out through discussion questions one and two, evaluating the Natural Environment and evaluating the meeting of Human Physical Needs. It is further suggested that students in grade five work with criteria for evaluating the meeting of Psychological Needs and grade six work with Social Needs criteria. Each of these areas of evaluation will lead to the identification of different environmental improvement opportunities for each of the grades, e.g.,

grade four -
- erosion control
- wildlife habitat improvement
- improving school site safety

grade five -
- site beautification
- nature trails, etc.

grade six -
- creative playgrounds
- outdoor classrooms, etc.

It is stressed that this level breakdown for evaluation and problem-solving is only suggested. Teachers may wish to emphasize other areas of evaluative criteria or different combinations according to student interest, existing site problem solving opportunities, etc.

Prior to the field investigation, list on the chalkboard the following questions which are based upon the evaluative criteria previously identified. Each student should select one question to answer during the field investigation. After the selection of questions the students should be given a period of time on the site to identify what they consider to be the best example which answers their question. The teacher may wish to map the location of each student's example. A guided tour of the site could follow with each student explaining the reason for his selection.

Questions to be answered on the site:

1. After walking around the site, answer the question:

   Are there a lot of different kinds of nature areas on the site? Nature areas would include grassy areas, shrub areas, forest areas, swampy areas, ponds and streams. How many are there and where are they located? Do you think there are many or a few?

2. Where on the site is the most erosion occurring?

3. Where is the least useful object on the site?

4. Where is the most dangerous spot or object on the site?

5. Where on the site is the most pollution occurring?

6. Where on the site is the best example of something which is wearing out?

Note: It is to the class's benefit for more than one person to answer a question but to do so independently. This could easily lead to a recognition of different values and a clarification of individual values. The teacher may also wish to have more questions and could develop them from the criteria previously identified.

Activity Four

A GRADE FOUR

PROBLEM - SOLVING ACTIVITY

Directions:

It is the purpose of this activity to involve the students with active problem solving. During the evaluation exercise of Activity Three they should have identified a variety of improvement opportunities. Some of them could be approached and worked on using the format and sequence described in Section I. It should be noted that improvement activities can correct a problem, prevent a problem or enhance an already desirable location.

Concepts To Be Developed

- Human beings set up institutions to more effectively meet their needs.
- Human beings develop and apply technology which utilizes natural components to produce human communities.
- Natural resources are natural components which are useful to man.

FIELD ACTIVITY (sample problem-solving unit)

The students may carry out the following problem-solving activity or, preferably, an activity developed with the teacher.

The following activity was developed by:

Jean Gallant,
Cecelia LeClaire, and
Mary Marsh.

IMPROVEMENT OF AN ERODED AREA ON THE SCHOOL SITE

BEHAVIORAL OBJECTIVES	ACTIVITIES	TEACHING AIDS
1. List (#) ways of solving the problem.	1. Investigate ways utilized to solve or prevent erosion problems at school or at home plantings, divisions, etc. -Class discussion of alternative solutions. -Collect pictures of preventative measures.	1. Pictures of methods of coping with erosion.
2. Choose, defend and describe verbally a method of solving the erosion problem.	2. Draw and describe pictures of selected solutions showing area after problem has been solved.	2. Opaque projector
3. Help prepare a plan to solve the problem.	3. Class discussion of necessary steps. -Delegation of duties. -Talk with custodian about construction, equipment and maintenance. -Determine time schedules.	
4. Help to carry out the plan.	4. Present plan to school principal. -Participate in improvement activity.	
5. Describe effects of the solution.	5. Maintain contact with the problem to assess the success of the activity.	

Student's Name_____

Date_____

PreTest_____

PostTest_____

MAINE ENVIRONMENTAL EDUCATION PROJECT
Title III, ESEA, 306

GRADE FOUR

PRE-POST TEST

SCORING	QUESTIONS
	CONCEPTS
1. _____(5)	1. Natural Community Components (slide of a pond community) There are six major parts of a natural community. One of them is water. List below the other five. 1._____ 2._____ 3._____ 4._____ 5._____
2. _____(4)	2. Interrelationship of Natural Components (slide of a flower) Name the four (4) non-living things plants need in order to live. 1._____ 2._____ 3._____ 4._____
3. _____(1)	3. Changes of Natural Components (slide of a natural and human community) Circle the letter beside the correct statement. a. Natural communities do not change; human communities do.

b. Natural communities change, human communities do not.

c. Both natural communities and human communities change.

d. Both natural and human communities do not change.

4. _____(1)

4. Cycling of Matter (slide of leaves falling)

Circle the letter beside the correct statement.

a. Dead leaves decay and the matter cannot be used again.

b. Matter the tree uses to make leaves can only be used once.

c. Dead animals do not provide matter for trees.

d. None of the above.

e. All of the above.

5. _____(5)

5. Flow of Energy (slide of sun)

Which of the following are able to capture the sun's energy and make it available to other living things?

Circle the letter beside the correct answers.

a. Tree
b. Rabbit
c. Fish
d. Wildflower
e. Rich soil

6. _____(1)

6. Closed System (slide of spaceship earth)

Circle the letter beside the best statement.

a. Trees create new matter.

b. Erosion produces new matter.

c. Rain adds new matter to the earth.

d. No new matter can be added to the earth.

e. None of the above.

7. _____(7)

7. Human Dependency on Nature (slide of crowd of people in a city)

Which of the following could people get along without? Circle the letter beside the correct answers.

a. Soil
b. Sun
c. Air
d. Plants
e. Water
f. All of these
g. None of these

8. _____(5)

8. Human Needs (slide of school site)

Pair each object with the human need that it meets. Place the letter in the correct blank.

OBJECT	NEED
____ Painted boards	a. Safety
____ Shrubs	b. Lasting
____ Fence	c. Variety
____ Swing	d. Pretty
____ Building shape	e. To get together

9. _____(6)

9. Creating Useful and Harmful Conditions (slide of developed suburbia)

In the columns below, list the things you see that people have done to make their community more useful and what they have done that is harmful.

USEFUL	HARMFUL
1._____	1._____
2._____	2._____
3._____	3._____

10. _____(4)

10. Institutions to Meet Needs (picture of city street)

What do you see in this picture which has been provided by the town to meet the needs of the people?

1._____ 3._____
2._____ 4._____

11. _____(5)

11. Application of Technology (picture of a city)

Circle the letter beside the correct answer.

The development of the environment is made possible by advances in:

a. Man
b. Nature
c. Technology
d. All of these
e. None of these

12. _____(1)

12. Natural Resource Components (slide of gravel pit)

Circle the letter beside the correct answer.

Gravel is a natural resource because:

a. It is part of nature.
b. It is useful to man.
c. It is the result of glaciers.
d. All of these
e. None of these

FEELINGS

13. _____(5)

Toward Nature (slide of pond)	VERY VALUABLE	VALUABLE	UN-DECIDED	NOT VALUABLE	WORTH-LESS
Circle the number which indicates how valuable you feel this pond is.	5	4	3	2	1

14. _____(5)

Toward Nature (slide of marsh)					
Circle the number which indicates how valuable you feel this marsh is.	5	4	3	2	1

15. _____(1)

15. Toward Self (slide of school site)

You are concerned about environmental problems around your school. What would you do? Circle the letter beside your answer.

a. Join an ecology club.

b. Organize an Earth Day project for your class.

c. Pick up the litter on your school grounds.

d. Nothing.

16. _____(1)

16. Toward Self

Your school grounds could use some work to make it a better place to be. Which of the following would you do? Circle the letter beside your answer.

a. Tell your parents about this.

b. Ask the principal if you can do something.

c. Ask your friends to help you talk to the principal.

d. Nothing.

17. _____(1)

17. Toward Others

Circle the letter beside your answer.

The reason you should shovel your sidewalk is:

a. It makes it easier for you to walk.

b. Others will be able to walk safely.

c. The mailman will deliver your mail.

18. _____(1)

18. Toward Others

Which of the following would you prefer to see in your community? Circle the letter beside your answer.

a. A hamburger stand

b. Street lights

c. A hill to slide on

d. A bowling alley

SKILLS

19. _____(1)

19. Discovery-Inquiry

You want to find out how to make a pond near your school larger. What would be the best way to go about

this project. Circle the letter beside the <u>best</u> answer.

a. Look at a pond

b. Get a group of friends with shovels and dig to make the pond larger.

c. Contact your local soil and water expert.

20. _____(3)

20. <u>Evaluation-Problem Identification</u>
(slide of a school site)

List the things that could be done to make this school site a better place to be.

_____

_____

_____

21. _____(3)

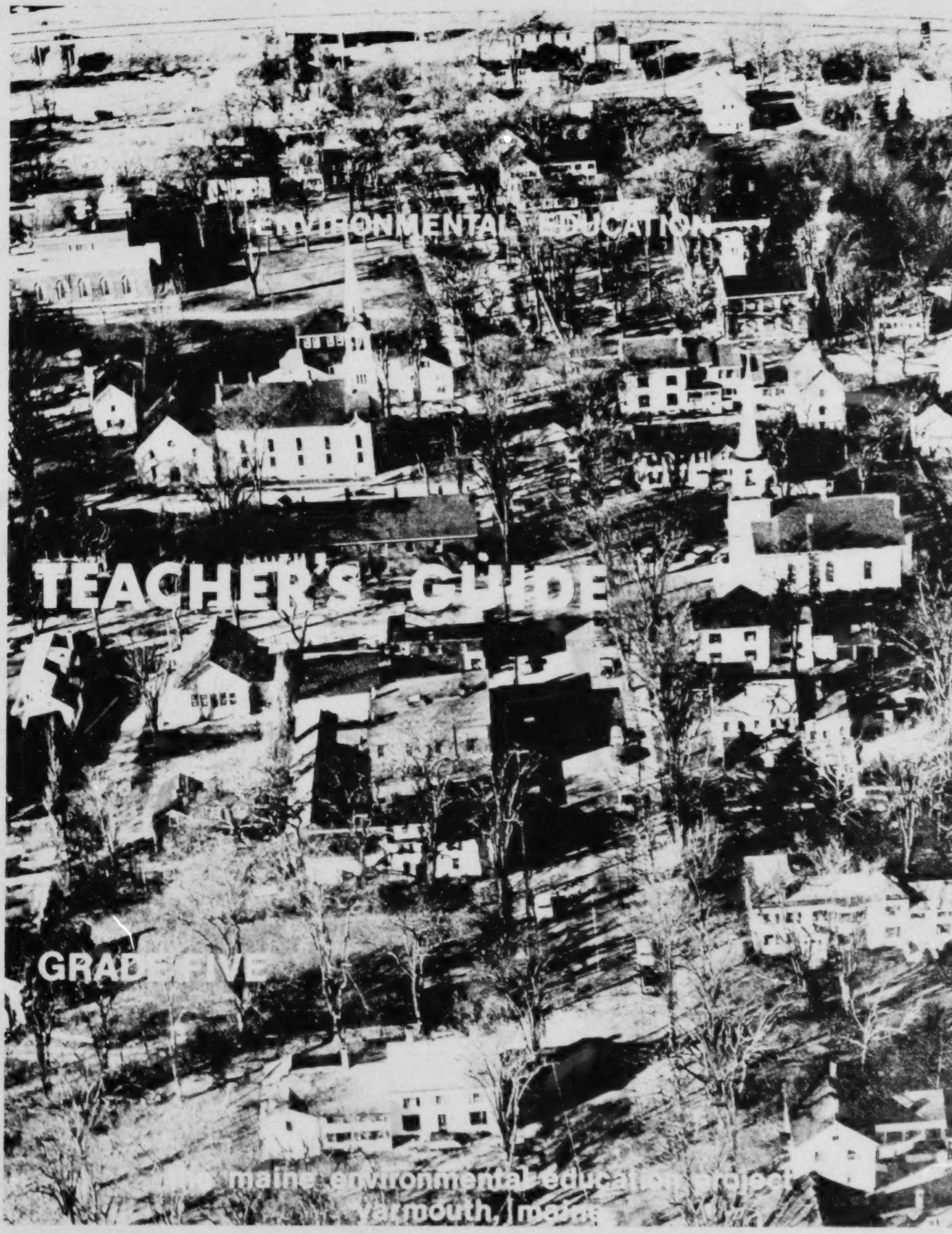
21. <u>Problem Solving</u>

You want to attract ducks to a pond near your school. What would you do first, second and third?

_____ Decide what kind of ducks you want to attract.

_____ Find out what the ducks need in order to survive.

_____ Make the area suitable for the ducks.


ENVIRONMENTAL EDUCATION
TEACHER'S GUIDE
GRAB
maine environmental education project
yarmouth, maine

Study Environment:

THE COMMUNITY

A community is a place where people live and work and play. It is a place where people come together to share their skills, exchange ideas, and look with hope to improve their lot, way of life, and environment.

Communities developed at particular locations due to natural features or physical elements in combination with human endeavors. Among those factors influencing the location of communities are natural features, raw materials, trade centers, and transportation crossroads. Some communities happened naturally, and others were planned. Communities or parts of them have grown as a result of population increase, transportation systems, new services, physical features, industrial development, and other influences. All communities have changed - some for the better and others for the worse. Too often these changes have not been anticipated or effectively dealt with. Citizens need to be educated to deal with community problems when they occur and, even more importantly, before they occur through sound community planning.

It is in community planning and betterment that one can find exciting opportunities for creating student interst and involvement. And it is in grades four and five that students can become exposed to those areas of community improvement for which they, themselves, have expressed concern.

CONCEPTS FOR GRADE FIVE

1. A natural community consists of all of the living components (plants and animals) in an area.

2. All living components of a community are interrelated with each other and the non-living components (land, air, energy/sun and water).

3. The living and non-living natural components of the environment are constantly going through regular patterns of change.

4. Within a natural community matter is continually re-used and changes from one form to another.

5. Within a natural community plants capture the sun's energy which is then made available for other living things.

6. All living communities on earth, together with the non-living parts of the environment, form a closed system.

7. People depend on nature ultimately to fulfill their needs.

8. Human communities, past and present, reflect human physical, psychological and social needs, and how people use the environment to meet these needs.

9. Human communities demonstrate how people can create both useful and harmful conditions.

10. Human beings set up institutions to meet their needs effectively.

11. Human beings develop and apply technology which uses natural components to produce human communities.

12. Natural resources are natural components which are useful to man.

Activity One

A GRADE FIVE CLASSROOM PRESENTATION

- THE COMMUNITY -

Directions:

This slide show script is designed to give the students a broad overview of natural and human communities. Slides should be selected to illustrate the points made in the script and to focus on local conditions. Questions provide for discussion opportunities and more will likely occur. This activity serves as a knowledge base and a preparation for the field trip.

Concepts To Be Developed:

- A natural community consists of the living components in an area.
- Human communities, past and present, reflect human physical, psychological and social needs, and how people use the environment to meet these needs.
- Human communities demonstrate how people can create both useful and harmful conditions.
- Human beings set up institutions to meet their needs effectively.
- Human beings develop and apply technology which uses natural components to produce human communities.
- Natural resources are natural components which are useful to man.

Presentation (Slide Show Script)

I. THE COMMUNITY

The earth is a closed system. This means that nothing is being added to the materials that already exists. If we look more closely, we see that the planet consists of many communities. For example, the forest is a community of living plants and animals which depend on each other for food. The living parts of the forest are also inter-

dependent with the non-living parts (land, air, water and the energy of the sun). Nature, then, is composed of plants, animals, land, air, water and energy. The forest consists of different areas. Beneath the floor or surface of the forest there is no light and the temperature is quite even. Here the root systems of plants carry food and water. The soil is the home for worms, insects and small animals. Above the forest basement is the forest floor made up of animal waste, fallen nuts, twigs, dead plants and debris. These materials will be broken down, returned to the soil and be re-used by the plants over a period of time. This is the natural way of recycling. Energy also passes from plants to animals and from animals to other animals when one is eaten by the other. Ladybird beetles, snails, chipmunks, oven birds, toads and snakes live on the forest floor. Beautiful wildflowers, such as the lady-slipper, grow here. Above the first floor is the second floor, or story, made up of shrubs or small trees. The top floor is found in the tops of tall trees. Many inhabitants carry on living activities in these floors - leaf feeding insects, bark beetles, squirrels and birds. They eventually die, the seasons come and go, and the forest, like the other natural communities, is constantly changing. No natural community remains the same over time.

A community where people live also has several areas and levels where different and necessary activities are carried on. Under the community are gas, water and electrical lines, like the roots of the plants, carrying things the community needs. Subway systems in cities carry people rapidly from place to place. On the ground level are located highways, streets and buildings for businesses, industries, education, religion, meetings and entertainment. There are special locations

throughout the community for dumps, farms, parks, historic sites and airports. Above the ground level are light poles, signs, highrise buildings, towers, utility lines and, sometimes, overhead transportation systems. So, we can see that like the forest community a man-made community has different areas and levels. It is interesting to note that many man-made communities have replaced the forest communities on the landscape.

II. COMMUNITY DEVELOPMENT

Communities usually were located near needed natural resources - minerals, soils, trees, rivers, lakes and oceans. Communities might have originated from old trading posts, stagecoach stops or by chance or accident. Some communities grew naturally with little plan. Others were carefully planned with streets laid out in rectangles or other patterns. The reasons why some communities grew are many: the growth of industry following the development of machines and electric power, increasing number of specialized jobs in manufacturing and servicing, invention of the automobile followed by garages and better transportation facilities, and growth in number and kinds of special services, stores and businesses to handle the increasing number of products. The greater population needed food, waste disposal systems, water supply, better transportation, fire protection, entertainment and other conveniences and necessities. As these things were provided, communities grew - sometimes into large cities.

III. COMMUNITIES TODAY

Communities today differ greatly in size, needs, activities they carry on, and the skill, wealth, and number of people they have. Most communities have a central business or shopping area where people do their shopping, work, and find recreation. In this area there might be

government buildings, libraries, police stations, and other structures and services. As communities grew in population, residential areas got farther away from the central business district. Shopping downtown becomes more inconvenient for some than going to the shopping centers built out of town and closer to these residential districts. The result is suburban living and shopping malls located around the periphery of the original central business district. Most communities also have an industrial area where products are made. Some of these are called industrial parks where new industries are encouraged to become established. Other areas are set aside for living-residential zones. Throughout, community parks and recreational areas are often provided for the enjoyment of the residents and visitors. Sometimes, these are natural areas owned by the community. They attract wildlife and often become study areas for schools, places for photographing plants and animals and for taking quiet walks. Airports, railroad stations, bus terminals and special parking facilities are located in cities to help people move easily and safely. Some transportation systems bring food and other needed products into the city. Other systems take garbage and other wastes away from the city. Dumps and special waste disposal areas must be provided. A sewage disposal system is needed in all communities for a clean environment.

Highways and streets connect all the parts of a city. These are also an important part of the fire protection system. A public water supply system is also necessary for fire protection as well as for home and industrial use. All the roofs and tarred ground areas keep the rain water from sinking into the ground, and so special drainage systems are needed to carry the water run-off away to prevent flooding, erosion, and sedimentation.

A community or city should be a place where people can enjoy life and live, work, and play with equal opportunity.

IV. COMMUNITY IMPROVEMENT

Communities are in a state of continual change. Planning is necessary so that communities will change for the better with pollution-free water, clean and planned streets, safe sidewalks, quiet residential areas, and beautiful parks. Plans are usually made by a planning board. This group of citizens helps to write zoning laws which, if voted on by the community, puts things in their right places for the protection and benefit of the citizens. This is a very important law which insures that the community grows and develops properly. Other laws make certain that buildings are built well, housing sites are developed correctly, trees are protected, private sewage disposal systems are constructed properly on suitable land, and signs do not detract from the community. Communities spend much time planning for the automobile. Streets and parking areas frequently aren't adequate to handle the increasing number of vehicles. Trains, buses, subways, helicopters, and other public transit systems are being used to move people in cities. Often the increase in traffic causes more noise and vibration than people like. Many people are working today to make communities quieter. The hearing of some people can be damaged by too much noise.

Besides good systems for moving people and goods, other systems are needed to provide electricity, gas and water. An adequate supply of water is necessary for health, cleaning, and fire protection. Some communities must use polluted water and purify it before they can use it. Too often water, after it is used, is dumped back into streams in a dirty condition. Sewage treatment is

necessary so that we may use our water for other things like swimming, fishing, boating, and wildlife habitat. Besides the proper disposal of sewage, communities must provide for the collection of garbage and waste and its disposal. Many cities are having trouble finding places where this waste can be dumped without polluting the air, water, and soil and destroying aesthetic appeal.

Many communities also lack green areas or natural areas. Park areas are needed for recreation, study, wildlife, and the enjoyment of the residents and visitors.

Each of us can make our feelings known and let other people know what kind of a community we want.

V. FIELD TRIP

We will take a trip on a bus around our town to see different parts of it. We will get off the bus in some places and walk, looking at some of the things we've talked about today. We'll see some good things and some things that we might do to make the community better. While we are on the bus, it will be like a classroom, and I will point out some of the interesting things in our community as we travel by them.

Activity Two

A GRADE FIVE FIELD TRIP

- THE COMMUNITY -

Directions:

It is the purpose of any field trip to give first-hand experiences. These can contribute to the development of concepts, feelings and skills.

As leader of the interpretative trip, consider the following outline which suggests places to go, things to observe, and teaching ideas relating to these places and objects. Most town offices have small maps of the community available. Portable speakers allow interpretation of some features while the bus is moving.

Section III, "Other Helpful Information," includes additional information on taking successful field trips.

Concepts To Be Developed:

- People depend on nature ultimately to fulfill their needs.
- Human communities, past and present, reflect human physical, psychological and social needs and how people use the environment to meet these needs.
- Human communities demonstrate how people can create both useful and harmful conditions.
- Human beings set up institutions to meet their needs effectively.
- Human beings develop and apply technology which uses natural components to produce human communities.
- Natural resources are natural components which are useful to man.

Field Trip:

Following are specific places and objects which lend themselves to interpretation and a greater understanding of the community. Beside each category of places are suggested ideas for discussion. These may be modified to relate to your own situation.

Places & Objects	Teaching Ideas
1. Human Settlement - Residential Areas - Commercial Areas	1. Most communities have distinct areas of development. These are residential areas, commercial areas, industrial areas, open spaces, etc. Each has a specific character and meets specific needs and wants. What makes each area unique and how do they differ in meeting needs and wants?
2. Transportation & Circulation - Streets - Sidewalks - Intersections	2. Most communities are designed with the private automobile in mind. This has caused problems, such as the need for more roads, the lowering of air quality, an overabundance of signs, safety hazards, and too much noise. Locate several problem areas caused by transportation in your community. Discuss how mass transit alleviates some of these problems.
3. Community Services and Utilities - Water - Sewage Disposal - Solid Waste Disposal	3. Some of the more vital community tasks are the provision of drinking water, the disposal of solid wastes, and the disposal of liquid wastes. Determine the source of your community's drinking water, the distribution system, and visit the water district. Visits to the sewage disposal plant and the dumps or landfill can provide good insights into the magnitude of these problems.
4. Recreation - Parks - Playgrounds	4. Visit a community recreation area. Discuss its location and considerations in planning such as need, population served, and cost of upkeep. How has today's life style affected the growth and demand for these types of areas? What should be the community's role?
5. Production Areas - Industrial Parks - Farms - Commercial Forests	5. Today people have the knowledge and skill to produce almost everything they need and want. Machines and factories have been created for this purpose and most communities have places where modern technology can be seen at work on areas where something is being produced. Locate

production areas in your community. What factors might have been considered in location (land suitability, waste disposal, cost of services and utilities, availability of labor and transportation, cost of land). Discuss problems associated with production areas (air and water pollution, pesticides, safety hazards, noise, exhaustion of natural resources, solid and sewage waste disposal).

6. Open Space
   - Vacant Lots
   - Wet lands
   - Flood Plains
   - Forests
   - Open Meadows

6. It is important to have open space areas in our communities. These areas provide wildlife habitats, buffer zones between conflicting land uses, and places for solitude, nature study and enjoyment. Locate open space areas in your community. How are these areas used?

THE NATURAL ENVIRONMENT

1. Plants
   - Nurseries
   - Tree Farms
   - Botanical Gardens
   - Natural Parks
   - Plantings along Roadways

1. Plants grow over much of the earth's land surface helping to control erosion, providing food and shelter for animals and composing an essential part of biophysical cycles (water, carbon, oxygen, nitrogen). Each species has its own characteristics which reflect the way it adapts to climate, soil and other conditions of its environment.

   Study the adaptations of a variety of plants (location, variety and number, growth rate, effects of light, water and soil on environment).

   Discuss uses of plants: food, clothing, oxygen, beauty, shade, wildlife habitat, lumber and paper.

2. Animals

- Wildlife Sanctuaries
- Natural Parks
- Open Space Areas (wetlands, meadows, vacant lots, woodlands)
- Feeding Areas
- Nesting Trees
- Animal Crossings

2. Animals form a major part of our environment. We not only need them for pleasure and food but also for the maintenance of the balance of nature. Animals depend on plants for food, shelter and oxygen. Plants, in turn, depend on animals for seed and pollination dispersal.

Investigate a variety of animal habitats. Discuss the kinds of animals seen and the food required for them. Locate evidence of animals dependence on plants; plant dependence on animals. Which animals are permanent residents? Which migrate?

How has man affected animals? Can you locate animal habitats threatened by human development? How does man depend on animals?

3. Water

- Ocean
- Lakes
- Streams
- Bogs
- Marshes
- Springs
- Ponds

3. Discuss the human need for water. Although 2/3 of our world is composed of water, it is in finite supply and its quality must remain high. Without clean water no life can survive since all living cells contain more than 90% water.

Discuss how man has abused the water supply.

Identify human uses of water: e.g., drinking, growing food, cooking, washing and cleaning, waste disposal, industry, cooling, transportation, power generation, recreation.

Identify unwise water uses: e.g., sewage dumping, industrial pollution, drainage and filling in of wildlife habitats.

Discuss possible solutions: sewage treatment, water purification, wise land-use planning, home water conservation.

Collect samples of water from a variety of areas: standing water (pond or lake), flowing water (river or stream), tap water, water from polluted areas. Examine, describe and compare them.

		Examine water on the school site. Where does it come from? Is the same amount always there? Why?
		Investigate wet areas around the school. What kinds of plants and animals are found near wet areas?
		Investigate what water does to bare soil. Are there erosion problems on your school site?
4. Land - Road Cuts - Outcroppings - Terrain - Glacial Evidences	4.	Identify land characteristics. Land is composed of rocks, minerals and soils and varies in its ability to support life, in its topography and in its drainage capacity from place to place.
		Investigate different areas for a variety of soil types, topography, and drainage capacity.
		Discuss the need for people to be sensitive to the differences in land suitability and quality before they decide to alter land forms. Land should be developed with care so that fragile areas and wildlife habitats can be protected.
5. Air - Cloud Formations - Air Clarity - Fog Areas - Inversion Areas	5.	Identify the need for air: e.g., oxygen, carbon dioxide, nitrogen, wind power, recreation, precipitation of fresh water and temperature control.
		Discuss the importance of air quality protection laws. They are necessary to prevent institutions, industries and other human developments from polluting the air. Individuals can help by supporting air quality measures which prevent open dumping and provide for emission controls on smoke stacks, incinerators and automobiles.
		Locate problem areas in your community.

6. Energy

- Sunlight
- Temperatures
- Wind Effects
- Sources of Noise

6. All living things need energy from the sun order to live. The sun provides us with food to make our body cells function. People are also dependent on the control and use of energy, such as sound, light and heat.

Discuss the need for and wise uses of energy. Energy supply in the form of fossil fuels such as coal and oil is in limited supply and must be used wisely. Fuels heat our homes and other buildings. Fuels are used for transportation and for generation of light and sound (electricity). We can preserve our limited fossil fuels by proper insulation of our buildings and by being conservative in our use of transportation and electricity.

Activity Three

A GRADE FIVE

ENVIRONMENTAL EVALUATION ACTIVITY

Directions:

It is the purpose of this activity to develop criteria for evaluating the stability of the natural ecosystem and the extent to which the environment meets human physical needs. Students must make judgments based upon their own values as to how well the environment meets these criteria. In such a process the students will identify opportunities to improve their environment.

Concepts To Be Developed:

- People depend on nature ultimately to fulfill their needs.
- Human communities, past and present, reflect human physical, psychological and social needs and how people use the environment to meet these needs.
- Human communities demonstrate how people can create both useful and harmful conditions.

Discussion and Field Evaluation:

A. Discussion

Prior to on-site evaluation, it is necessary to discuss with the students the criteria for evaluating their environment. The following outline provides questions for helping students to arrive at these criteria. Using the chalkboard, a question and answer format might be the best approach.

1. Criteria for evaluating the quality of the Natural Environment.

Discussion Question:
What do you think makes the natural environment healthy?

Answer (Criteria to be brought out):

1) A variety of natural areas
2) A diversity of plant and animal species
3) The presence of fertile soil
4) Balanced populations of species

2. Criteria for evaluating how well the environment meets Human Physical needs.

Discussion Question:
How can the human environment meet our physical needs?

Answer (Criteria to be brought out):

It must be:
1) Useful
2) Safe
3) Healthy
4) Lasting

3. Criteria for evaluating how the environment meets Human Psychological needs.

Discussion Question:
How can the human environment make us feel better?

Answer (Criteria to be brought out):

It must:
1) Be orderly
2) Have harmony of parts
3) Have permanence
4) Have places set aside for privacy
5) Be aesthetic (pretty)
6) Have areas for play
7) Contain variety
8) Have opportunities for investigation and learning

4. Criteria for evaluating how the environment meets Human Social needs.

Discussion Question:
How can the human environment help people to get along better?

Answer (Criteria to be brought out):

It should:
1) Provide places for people to get together
2) Offer opportunities for people to perform and demonstrate their talents
3) Offer opportunities for people to compete

B. Field Evaluation

Through the previous activity the students developed criteria for evaluating the environment in four areas of need. During this activity students will use the criteria to evaluate a study environment, such as the school site.

It is suggested that students in grade four work with or apply the criteria brought out through discussion questions one and two, evaluating the natural environment and evaluating the meeting of human physical needs. It is further suggested that students in grade five work with criteria for evaluating the meeting of psychological needs and grade six work with social needs criteria. Each of these areas of evaluation will lead to the identification of different environmental improvement opportunities for each of the grades, e.g.,

grade four -
- erosion control
- wildlife habitat improvement
- improving school site safety

grade five -
- site beautification
- nature trails, etc.

grade six -
- creative playgrounds
- outdoor classrooms, etc.

It is stressed that this level breakdown for evaluation and problem-solving is only suggested. Teachers may wish to emphasize other areas of evaluative criteria or different combinations according to student interest, existing site problem-solving opportunities, etc.

List on the chalkboard the following questions which are based upon the evaluative criteria previously identified. Each student should select one question to answer during the field investigation. After the selection of questions the students should be given a period of time on the site to identify what they consider to be the best example which answers their question. The teacher may wish to map the location of each student's example. A guided tour of the site could follow with each student explaining the reason for his selection.

Questions to be answered on the site:

1. After walking around the site, answer the question:

   Are there a lot of different kinds of nature areas on the site?

   Nature areas would include: grassy areas, shrub areas, forest areas, swampy areas, ponds and streams.

   How many are there and where are they located?

2. Where on the site is the most erosion occurring?

3. Where is the least useful object on the site?

4. Where is the most dangerous spot or object on the site?

5. Where on the site is the most pollution occurring?

6. Where on the site is the best example of something which is wearing out?

NOTE: It is to the class's benefit for more than one person to answer a question but to do so independently. This could easily lead to a recognition of different values and a clarification of individual values.

Activity Four

A GRADE FIVE

PROBLEM-SOLVING ACTIVITY

Directions:

It is the purpose of this activity to involve the students with active problem solving in their physical environment. During the evaluation exercises of Activity Three, they should have identified a variety of improvement opportunities. Some of these could be approached and worked on using the format and sequence described in Section I. It should be noted that improvement activities can correct a problem, prevent a problem, or enhance an already desirable location.

Concepts To Be Developed:

- Human being set up institutions to meet their needs effectively.
- Human beings develop and apply technology which uses natural components to produce human communities.
- Natural resources are natural components which are useful to man.

Field Activity: (sample problem-solving unit)

The students may carry out this problem-solving activity or, preferably, an activity developed by the teacher. The following activity was developed by:

Mary Brewer,
Peggy Hughes,
Karen Phillip, and
Hank Kasven.

DEVELOPMENT OF A NATURE TRAIL ON THE SCHOOL SITE

BEHAVIORAL OBJECTIVES	ACTIVITIES	TEACHING AIDS
The student will be able to:		
1. State orally (#) reasons as to the benefit of a nature trail.	1. A motivational discussion could be one possible trend. - How would you like to go on a nature hike? - Where would you like to go? - Limitations of leaving the school property. - Where on the school property could we go?	
2. Orally state a procedure for surveying an area.	2. A ten minute survey of the materials in the classroom will be taken. - From this activity a proposed procedure could be developed and extended. - This activity will provide experience in developing the techniques which will later be used in the actual survey on the school site.	
3. List (#) distinguishing characteristics (living and nonliving) of the area.	3. The students will walk around the site to pick out those areas they think important (naturally, historically, aesthetically, etc.).	

4. Compile maps showing locations of items in B.O. # 3.	4. Draw a map of the survey site. - Locate the features identified on the prepared maps.	4. Map paper or graph paper.
5. Develop a procedure on how to construct a nature trail.	5. The class will conduct a discussion on the subject. - Discuss possible themes and objectives of trails	5. Materials and readings on trail development and construction.
6. Plot 3 possible alternative trails.	6. On the maps, link the desired features by trails which would be possible to develop.	6. Maps with identified features.
7. Select and justify one trail.	7. The students will present a written or oral presentation accompanied by a diagram illustrating a trail to the group - After the presentations a vote should be taken to select the trail.	
8. Delegate assignments to construct a nature trail.	8. The students will meet to determine a schedule as follows: - task - person responsible - time limit	
9. Carry out the plan.	9. Trail construction.	9. Tools, signs, wood chips, etc.
10. Develop a plan for management, evaluation and maintenance of the trail.	10. At weekly intervals the students will make observations and list those areas that need attention. - Then the students will determine who will be responsible for changes and/or maintenance.	

Student's Name_____

Date_____

PreTest_____

PostTest_____

MAINE ENVIRONMENTAL EDUCATION PROJECT
Title III, ESEA, 306

GRADE FIVE

PRE-POST TEST

SCORING	QUESTIONS
	CONCEPTS
1. _____(5)	1. Natural Community Components (slide of a forest) Any natural community like this is made up of the 6 major natural components. An example of a component would be PLANTS. What are the other five? 1._____ 2._____ 3._____ 4._____ 5._____.
2. _____(4)	2. Interrelationships of Natural Components (slide of a plant) What non-living components do plants need in order to live? _____ _____ _____ _____
3. _____(1)	3. Changes of Natural Components (picture of a forest) What happens to a natural community over time? Circle the letter beside the best answer. a. It changes.

b. It shrinks.

c. It stays the same.

d. It becomes larger.

e. None of the above.

4. _____(1)

4. Cycling of Matter (picture of a dead animal)

Circle the letter beside the best answer.

In nature a dead animal serves as:

a. a litter problem.

b. a pollution problem.

c. a source of matter for plants.

d. a waste of matter.

e. none of the above.

5. _____(1)

5. Flow of Energy (picture of the sun)

Circle the letter beside the best answer.

Which of the following is correct?

a. Energy is found only in plants.

b. Energy is found only in animals.

c. Energy is passed from plants to animals.

d. Energy is passed from the sun to animals.

6. _____(1)

6. Closed System (picture of planet earth)

Circle the letter beside the best statement.

a. Communities create matter.

b. The planet creates matter.

c. The sun creates matter.

d. Clouds create matter.

e. None of the above.

7. _____(1)

7. Human Dependency on Nature (slide of school site)

Circle the letter beside your answer.

Which of the following could you get along without?

a. air
b. land
c. water
d. plants
g. animals
f. sun
g. concrete

8. _____(4)

8. Human Needs (slide of a school site)

What do you see in this picture which meets each of the following needs?

Safety _____

Beauty _____

Play _____

Animal habitats _____

9. _____(6)

9. Creating Useful and Harmful Conditions (slide of an urban area)

In the columns below, list the things you see that people have done to make their community more useful and what they have done that is harmful.

USEFUL	HARMFUL
1._____	1._____
2._____	2._____
3._____	3._____

10. _____(1)

10. Institutions to Meet Needs (slide of a street)

We use land, water, air, plants, and animals to meet our needs for food, shelter, transportation, recreation, etc. One such need is city streets. Who decides when and where a street will be built in your community?

Circle the letter beside your answer.

a. The residents on the next street decide.

b. One person in the town decides.

c. A scientist working with a conservation group decides.

d. An industry decides.

e. The town government decides.

11. _____(1)

11. Application of Technology (slide of a street)

Which statement is best in describing how a street is built. Circle the letter beside your answer.

a. Trained people must use tools and machines to change natural resources to make a street.

b. The kind of soil determines who will build the street.

c. Scientists select the tools depending on who will build the street.

d. None of the above.

e. All of the above.

12. _____(6)

12. Natural Resources Components (slide of a street)

Which of the following in considered a natural resource when building a street? Circle the letter beside your answer.

a. Flowers
b. Fields
c. Rocks
d. Rabbits
e. Deer
f. None of the above

FEELINGS

13. _____(10)*

13. Toward Nature (slide of a tree farm)

A tree farm, like the one pictured here, is often found in communities. Place an X on each of the lines below over the number which shows best how you feel about tree farms.

WORTHLESS 0 1 2 3 4 5 6 7 8 9 10 VALUABLE

UGLY 0 1 2 3 4 5 6 7 8 9 10 BEAUTIFUL

HARMFUL 0 1 2 3 4 5 6 7 8 9 10 USEFUL

GROSS 0 1 2 3 4 5 6 7 8 9 10 NEAT

14. _____(5)

14. Toward Nature (slide of a wildlife habitat)

Many people feel that a wildlife habitat, like the one pictured here, has little use to the community. Circle the number below that best shows how you feel about this statement.

STRONGLY DISAGREE	DIS-AGREE	UN-DECIDED	AGREE	STRONGLY AGREE
5	4	3	2	1

15. _____(10)*

15. Toward Self (slide of school grounds)

You are asked to make an improvement on your school grounds which will make it a better place to be. Place an X on each of the lines over the number which shows how you feel about your ability to do this.

COLD 0 1 2 3 4 5 6 7 8 9 10 HOT

WEAK 0 1 2 3 4 5 6 7 8 9 10 STRONG

SCARED 0 1 2 3 4 5 6 7 8 9 10 BRAVE

16. _____(5)

16. Toward Self (slide of school grounds)

Improvements on a school site are always difficult for students to do. Circle the number below that shows best how you feel about this statement.

STRONGLY DISAGREE	DIS-AGREE	UN-DECIDED	AGREE	STRONGLY AGREE
5	4	3	2	1

17. _____(10)*

17. Toward Others (slide of a school site)

You and a classmate each propose a school site improvement for the class to do. When the class votes, the other student's proposal is chosen. You are then asked to help the other student plan how to do the improvement. Place an X on each of the lines over the number which best describes how you feel about doing this.

SAD 0 1 2 3 4 5 6 7 8 9 10 HAPPY

DARK 0 1 2 3 4 5 6 7 8 9 10 LIGHT

COLD 0 1 2 3 4 5 6 7 8 9 10 HOT

18. _____(5)

18. Toward Others (slide of a school site)

The main reason for improving a school site is to make it a better place to be for students in classes below you. Circle the number which shows how you feel about this statement.

STRONGLY DISAGREE	DIS-AGREE	UN-DECIDED	AGREE	STRONGLY AGREE
1	2	3	4	5

SKILLS

19. _____(1)

19. Discovery-Inquiry (slide of a school site)

Your class is going to investigate the school site to find out what buildings, natural features, and other things exist and where they are located. Circle the letter beside the statement which best describes how this should be done.

a. Walk around the school grounds and talk with the custodian.

b. Walk over the site and draw and label the buildings and natural features on a map.

c. Walk around the school grounds and write down the information in detailed notes.

d. None of the above.

20. _____(4)

20. Evaluation-Problem Identification (slide of a school site)

Below on the left are listed several ways in which things on a school site can make people feel good. On the right are listed features on the site which are shown in the slide. Match the school site features with how they make people feel.

___ Provide privacy	a.	School Building
___ Provide beauty	b.	Woods
___ Provide opportunities for learning	c.	Shrubs
	d.	Walkways

21. _____(3)

21. Problem Solving (slide of a nature trail)

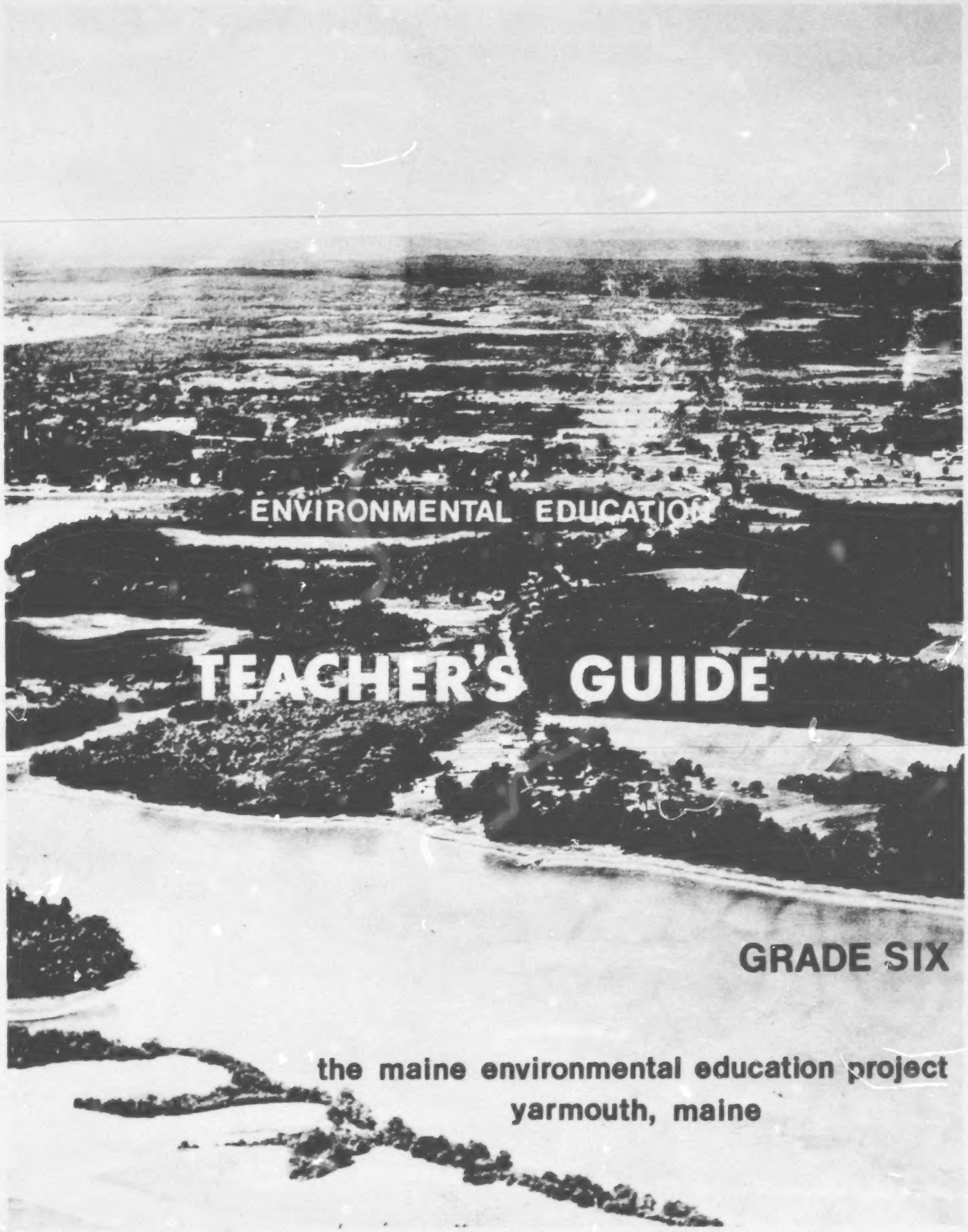
You are constructing a nature trail on your school site. What would you do first, second and third? Number the steps in order.

_____Assign people to make a nature trail.

_____List the characteristics of the area where the trail is to be built.

_____Plot three possible alternative trails.

* Add the numbers of each scale after the statement and obtain the averages for the score.


ENVIRONMENTAL EDUCATION
TEACHER'S GUIDE
GRADE SIX
the maine environmental education project
yarmouth, maine

Study Environment:

THE REGION

Communities are interdependent. They are highly interrelated by highway and transportation systems, economic activity, power distributions, and natural resource characteristics, availability, and use. Decisions made by government and private enterprise, physically far removed from the community, may often affect it. Few communities are so independent that they can totally manage and solve their problems at their own municipal levels.

Comprehensive community and regional planning is recognized as one way towns and cities can begin to cope with external forces which affect local environmental quality. For this kind of approach to be effective, citizens must become more knowledgeable and concerned about their region as a whole.

The regional environment with its associated environmental problems provides the focal point for expanding the community concept and for developing broader and deeper understandings and feelings in students at the sixth grade level.

CONCEPTS FOR GRADE SIX

1. A natural community consists of the living components (plants and animals) in an area.

2. All living components of a community are interrelated with each other and with the non-living components (land, air, energy/sun and water).

3. The living and non-living natural components of the environment are constantly going through regular patterns of change.

4. Within a natural community matter is continually re-used and changes from one form to another.

5. Within a natural community plants capture the sun's energy which is then made available for other living things.

6. All the communities on earth, together with the non-living parts of the environment, form a closed system.

7. People depend on nature ultimately to fulfill their needs.

8. Human communities, past and present, reflect human physical, psychological and social needs and how people use the environment to meet these needs.

9. Human communities demonstrate how people can create both useful and harmful conditions.

10. Human beings set up institutions to meet their needs effectively.

11. Human beings develop and apply technology which uses natural components to produce human communities.

12. Natural resources are natural components which are useful to man.

13. Natural ecosystems, through the processes of evolution and succession tend toward a condition of stability.

14. People provide for their needs by working on the natural resources through an institutional system and a technological system to produce and maintain the human environment.

15. Environmental problems are those conditions which affect the quality of life and result from the inefficient functioning of the human systems.

Activity One

A GRADE SIX CLASSROOM PRESENTATION

Directions:

This slide show script is designed to give the students a broad overview of natural and human communities. Slides should be selected to illustratethe points made in the script and to focus on local conditions Questions provide for discussion opportunities and more will likely occur. This activity serves as a knowledge base and a preparation for the field trip.

Concepts To Be Developed:

- A natural community consists of the living components (plants and animals) in the area.
- All living components of a community are interrelated with each other and with the non-living components (land, air, energy/sun and water).
- People depend on nature ultimately to fulfill their needs.
- Human communities, past and present, reflect human physical, psychological and social needs and how people use the environment to meet these needs.
- Human communities demonstrate how people can create both useful and harmful conditions.
- Human beings set up institutions to meet their needs effectively.
- Human beings develop and apply technology which uses natural components to produce human communities.
- Environmental problems are those conditions which affect the quality of life and result in the inefficient functioning of the human systems.

Presentation:

I. THE REGION

Our school is part of our community. It was built and is maintained by our town. Some communities cannot, however, support large, expensive schools by themselves but must join with other near-by communities and provide quality education through large regional schools. Why is this sometimes necessary? (lack of resources - human, economic and physical)

All communities possess land, water, air, plants, animals, and energy, but not all have them in the same quantities, qualities, or availabilities for our use. Therefore, it is to a community's advantage to work with other communities sharing resources and planning the orderly growth of the area for the benefit of all citizens.

All citizens in a community are affected by what other towns do for land and water development, structural design, transportation, utilities, recreation, and pollution and pest control. This wasn't always so apparent, however, as it is now.

II. REGIONAL DEVELOPMENT

When our early settlers came to this area, they were few in number and settled where the land and other resources seemed to be able to provide best for food, clothing, shelter, and other needs. Their first settlements were small, few in number, and often widely scattered. Most were self-sufficient and generally had little effect on each other. Transportation was slow as were communications. Gradually, as new knowledge was acquired and methods of doing things discovered, communities began to grow.

Electric power became available. New machines were invented. People specialized in jobs. Transportation improved. More people were attracted to growing communities where jobs were plentiful and resources available. More people were needed to run the community government, and their jobs became more complex. Towns began to affect each other. A dam and an industry on a river would affect the amount and quality of the water below it available to the next community. Communities found it convenient to share county government buildings. They depended on each other for highway maintenance and the support of transportation systems, such as coaches and trains. Electric power services in one town might come from another. Water supplies needed to be shared. Wildlife was considered the property of everyone. If one town was not sanitary, disease could spread to others. Thus, today, communities can no longer be independent but must depend on other communities.

III. THE REGION TODAY

A region may consist of several communities. They are together dependent upon the development of land and water - use of the ocean and tidal areas for food and recreation, wetlands to provide nutrients for fish and other aquatic life, waterfront development for access and tourism, sand and gravel supplies for highway and other construction projects. Towns and inhabitants are affected by structures which interrupt the skyline, either enhancing or degrading scenic views in their area. Billboards and outdoor advertising structures either contribute to better use of the area by providing essential information or detract from it with unnecessary information which could be more appropriately advertised elsewhere.

Communities depend on each other for cooperation in highway development, supporting efficient and quality public transportation systems, providing land for power transmission and gas pipe lines, water supply facilities, recreational areas, and unique natural features and open space. Towns should cooperate in providing and protecting habitat and regulating the management of wildlife. Of all areas where communities should cooperate, none is more critical than pollution and pest control. Noise is unwanted sound. Transportation and some industries and community activities contribute to this. Sound can travel across several towns. Regional controls for aircraft flight patterns, location of highways and business, and other preventive measures are necessary. Air pollution is another regional problem. Automobiles and industries are the major sources of this pollution. Gases and particles in the air are associated with causing disease and death, unemployment, bad smells, eye irritation, tree and plant destruction, and soiled clothing. Air pollution knows no community boundaries.

Water pollution is similar except it moves only where water moves - ground water, streams, lakes and oceans. It can cause disease, limit use, and destroy beauty. Litter and solid waste disposal are also becoming acute problems for communities. Towns in some areas are beginning to run out of places where they can dispose of waste. Burning pollutes the air. Litter along highways and in waterways is a problem costing taxpayers thousands of dollars. Some communities combine their capital and resources to construct regional waste treatment facilities. Some of these plants treat solid waste, sewage, and convert sea water to fresh water in a combined operation.

Where litter and waste prevail, rats and other animals become pests. They can spread disease and become nuisances, as do insects, unless controlled. Communities must cooperate to insure control of these kinds of problems. Research and laws need to be initiated to provide adequate control of pesticides and their long term and unknown effects. The harmful effects of DDT and other pesticides are only beginning to become known.

IV. SOLUTIONS

Communities and citizens should support regional planning commissions and make them effective. The State will share a community's expense in supporting such groups. Such a commission should have a staff of professional planners who can assist towns with their own problems and plans. One of its primary responsibilities is to prepare a complete or comprehensive plan for the growth of a region. It can also maintain information on communities and provide a library of reference materials. It can become a forum for discussion concerning the future development of the area.

Contracts between communities for water and sewer facilities, road maintenance equipment, schools, rubbish disposal, health services, police and fire protection are other ways in which towns can work together.

Some communities are today frequently joining together to provide a service which individually they could not afford. Examples include a sewer commission or air pollution commission. Some communities have formed a "Council of Government" who meet regularly to discuss regional problems.

V. FIELD TRIP

We will take a trip around several communities in our region to see some of the things we have discussed. We will see some good things and some things which might be done to make our region a better one.

Activity Two

A GRADE SIX FIELD TRIP

Directions:

It is the purpose of any field trip to give first-hand experiences. These can contribute to the development of concepts, feelings and skills.

As leader of the interpretative trip, consider the following outline which suggests places to go, things to observe and teaching ideas relating to these places and objects. Most town offices have small maps of the community available. Portable speakers allow interpretation of some features while the bus is moving.

Section III - Other Helpful Information - includes additional information on taking successful field trips.

Concepts To Be Developed:

- People depend on nature ultimately to fulfill their needs.
- Human communities, past and present, reflect human physical, psychological and social needs and how people use the environment to meet these needs.
- Human communities demonstrate how people can create both useful and harmful conditions.
- Human beings set up institutions to meet their needs effectively.
- Human beings develop and apply technology which uses natural components to produce human communities.
- Natural resources are natural component which are useful to man.
- People provide for their needs by working on the natural resources through an institutional system and a technological system to produce and maintain the human environment.
- Environmental problems are those conditions which affect the quality of life and result from the inefficient functioning of the human system.

Field Trip:

Following are specific places and objects which lend themselves to interpretation and a greater understanding of the community. Beside each category or place are suggested ideas for discussion. They may be modified to relate to your own situation.

THE HUMAN ENVIRONMENT

Places & Objects	Teaching Ideas
1. Human Settlement	1. Comparison of residential areas. Identify safety features, crowding, variety in structure.
-Residential Areas	
-Commercial Areas	Point out historical landmarks; when an area was settled has a lasting effect on a community's development.
-Institutional Areas (schools, libraries, hospitals, Post Office, etc.)	Regional dependency on various institutions (health care and cultural activities).
-Historic Areas (buildings, sites, monuments)	Introduction of regional shopping areas and their effect on the community.
-Cemeteries	Regulation and controls of high-rise buildings, billboards and other structures extend beyond the scope of a single community. Professional designers and planners can do much to create functional and pleasing structures.
-Highrise buildings, billboards	
2. Transportation/ Circulation	2. Highways and interstates have increased regional mobility.
-Highways	Discuss the effect roads have on the physical environment and the amount of land needed for transportation.
-Interstate	
-Public Transit	Transportation vehicles cause much air pollution and a depletion of natural resources (gas, oil). Discuss alternative transportation such as mass transit, car pooling, bicycles, walking.

3. Community Services & Utilities -Regional Water Systems -Solid Waste Disposal -Sewage Disposal -Power Transmission	3.	Point out how some utilities and services are controlled by the government (water, waste disposal). Others are controlled privately (electricity, fuel oils). Discuss costs and benefits of regional approach to public services and utilities such as water supply and sewage treatment. Alternate uses of power line rights of way for wildlife, recreation, foot trails, Christmas tree plantations.
4. Recreation -State Parks -Regional Parks -Wildlife Areas	4.	Wildlife is a valuable resource for recreation as well as for maintaining an ecological balance. Parks should be physically and economically accessible to the people in the area. Scenic open space and natural areas secured through lease, easement rights or purchase provide outdoor recreational activities as well as beauty, wildlife habitat and protection of unique natural features.
5. Production Areas -Industrial Parks -Farming -Forestry -Fish Processing	5.	The type of production in an area affects the types of people who settle in an area. Production areas affect the growth of the region; introduction of new jobs, need for more housing and commercial areas. Production areas need pollution control. The need to control the quality of the air, water and sound and to combat problems of solid wastes, pests and the use of pesticides has become a regional problem.
6. Open Space -Vacant Lots -Wetlands -Flood Plains -Forests -Open Meadows	6.	It is important to have open areas in our communities. These areas provide wildlife habitats, buffer zones between conflicting land uses, and places for solitude, nature study and enjoyment. Locate open space areas in your community. How are these areas used?

1. Plants

- -Nurseries
- -Tree Farms
- -Botanical Gardens
- -Natural Parks
- -Plantings along Roadways

1. Plants grow over much of the earth's land surface helping to control erosion, providing food and shelter for animals and composing an essential part of biophysical cycles (water, carbon, oxygen, nitrogen). Each species has its own characteristics which reflect the way it adapts to climate, soil and other conditions of its environment.

Study the adaptations of a variety of plants (location, variety and number, growth rate, effects of light, water and soil on environment).

Discuss uses of plants: i.e., food, clothing, oxygen, beauty, shade, wildlife habitat, lumber and paper.

2. Animals

- -Wildlife Sanctuaries
- -Natural Parks
- -Open Space Areas (wetlands, meadows, vacant lots, woodlands)
- -Feeding Areas
- -Nesting Trees
- -Animal Crossings

2. Animals form a major part of our environment. We not only have them for pleasure and food but also for the maintenance of the balance of nature. Animals depend on plants for food, shelter and oxygen. Plants, in turn, depend on animals for seed and pollination dispersal.

Investigate a variety of animal habitats. Discuss the kinds of animals seen and the food required for them. Locate evidence of animal dependence on plants; plant dependence on animals. Which animals are permanent residents? Which migrate?

How has man affected animals? Can you locate animal habitats threatened by human development? How does man depend on animals?

3. Water

- -Ocean
- -Lakes
- -Streams
- -Bogs
- -Marshes
- -Springs
- -Ponds

3. Discuss the human need for water. Although 2/3 of our world is composed of water, it is finite supply and its quality must remain high. Without clean water no life can survive since all living cells contain more than 90% water.

Discuss how man has abused the water supply.

Identify human uses of water: e.g., drinking, growing food, cooking, washing and cleaning, waste disposal, industry, cooling, transportation,

		power generation, recreation. Identify unwise water uses: e.g., sewage dumping, industrial pollution, drainage and filling in of wildlife habitats. Discuss possible solutions: e.g., sewage treatment, water purification, wise land use planning, home water conservation. Collect samples of water from a variety of areas: standing water (pond or lake), flowing water (river or stream), tap water, water from polluted areas. Examine, describe and compare them. Investigate wet areas around the school. What kinds of plants and animals are found near wet areas. Investigate what water does to bare soil. Are there erosion problems on your school site?
4. <u>Land</u> -Road Cuts -Outcroppings -Terrain -Glacial Evidences	4.	Identify land characteristics. Land is composed of rocks, minerals and soils and varies in its ability to support life, in its topography and in its drainage capacity from place to place. Investigate different areas for a variety of soil types, topography and drainage capacity. Discuss the need for people to be sensitive to the differences in land suitability and quality before they decide to alter land forms. Land should be developed with care so that fragile areas and wildlife habitats can be protected.
5. <u>Air</u> -Cloud Formations -Air Clarity -Fog Areas -Inversion Areas	5.	Identify the need for air: e.g., oxygen, carbon dioxide, nitrogen, wind power, recreation, precipitation of fresh water and temperature control. Discuss the importance of air quality protection laws. They are necessary to prevent institutions, industries and other human developments from polluting the air. Individuals can help by supporting

quality measures which prevent open dumping and provide for emission controls on smoke stacks, incinerators and automobiles.

Locate the problem areas in your community.

6. Energy

-Sunlight

-Temperatures

-Wind Effects

-Sources of Noise

6. All living things need energy from the sun in order to live. The sun provides us with food to make our body cells function. People are also dependent on the control and use of energy, such as sound, light and heat. Discuss the need for and wise uses of energy.

Energy supplies in the form of fossil fuels such as coal and oil is in limited supply and must be used wisely.. Fuels heat our homes and other buildings. Fuels are used for transportation and for generation of light and sound (electricity). We can preserve our limited fossel fuels by proper insulation of our buildings and by being conservative in our use of transportation and electricity.

Activity Three

A GRADE SIX ENVIRONMENTAL EVALUATION ACTIVITY

Directions:

It is the purpose of this activity to develop criteria for evaluating the stability of the natural ecosystem and the extent to which the environment meets human physical needs. Students must make judgments based upon their own values as to how well the environment meets these criteria. In such a process the students will identify opportunities to improve their environment.

Concepts To Be Developed

- People depend on nature ultimately to fulfill their needs.
- Human communities, past and present, reflect human physical, psychological, and social needs and how people use the environment to meet these needs.
- Human communities demonstrate how people can create both useful and harmful conditions.

Discussion and Field Evaluation

A. Discussion

Prior to on-site evaluation, it is necessary to discuss with the students the criteria for evaluating their environment. The following outline provides questions for helping students to arrive at these criteria. Using the chalkboard, a question and answer format might be the best approach.

1. Criteria for evaluating the quality of the NATURAL ENVIRONMENT.

Discussion Question:

What do you think makes the natural environment healthy?

Answer (Criteria to be brought out):

1) A variety of natural areas
2) A diversity of plant and animal species
3) The presence of fertile soil
4) Balanced populations for each species

2. Criteria for evaluating how well the environment meets HUMAN PHYSICAL needs.

Discussion Questions:

How can the human environment meet our physical needs?

Answer (Criteria to be brought out):

It must be:

1) Useful
2) Safe
3) Healthy
4) Lasting

3. Criteria for evaluating how the environment meets HUMAN PSYCHOLOGICAL needs.

Discussion Question:

How can the human environment make us feel better?

Answer (Criteria to be brought out):

It must:

1) Be orderly
2) Have harmony of parts
3) Have permanence
4) Have places set aside for privacy
5) Be aesthetic (pretty)
6) Have areas for play
7) Contain variety
8) Have opportunities for investigation and learning

4. Criteria for evaluating how the environment meets HUMAN SOCIAL needs.

Discussion Question:

How can the human environment help people to get along better?

Answer (Criteria to be brought out):

It should:

1) Provide places for people to get together
2) Offer opportunities for people to perform and demonstrate their talents
3) Offer opportunities for people to compete

B. Field Evaluation

Through the previous activity the students developed criteria for evaluating the environment in four areas of need. During this activity students will use the criteria to evaluate a study environment, such as the school site. It is suggested that students in grade four work with or apply the criteria brought out through discussion questions one and two, evaluating the Natural Environment and evaluating the meeting of Human Physical Needs. It is further suggested that students in grade five work with criteria for evaluating the meeting of Psychological Needs and grade six work with Social Needs criteria. Each of these areas of evaluation will lead to the identification of different environmental improvement opportunities for each of the grades, e.g.,

grade four -
- erosion control
- wildlife habitat improvement
- improving school site safety

grade five -
- site beautification
- nature trails, etc.

grade six -
- creative playgrounds
- outdoor classrooms, etc.

It is stressed that this level breakdown for evaluation and problem-solving is only suggested. Teachers may wish to emphasize other areas of evaluative criteria or different combinations according to student interest, existing site problem solving opportunities, etc.

Prior to the field investigation, list on the chalkboard the following questions which are based upon the evaluative criteria previously identified. Each student should select one question to answer during the field investigation. After the selection of questions the students should be given a period of time on the site to identify what they consider to be the best example which answers their question. The teacher may wish to map the location of each student's example. A guided tour of the site could follow with each student explaining the reason for his selection.

Questions to be answered on the site:

1. After walking around the site, answer the question:

   Are there a lot of different kinds of nature areas on the site? Nature areas would include grassy areas, shrub areas, forest areas, swampy areas, ponds and streams. How many are there and where are they located? Do you think there are many or a few?

2. Where on the site is the most erosion occurring?

3. Where is the least useful object on the site?

4. Where is the most dangerous spot or object on the site?

5. Where on the site is the most pollution occurring?

6. Where on the site is the best example of something which is wearing out?

Note: It is to the class's benefit for more than one person to answer a question but to do so independently. This could easily lead to a recognition of different values and a clarification of individual values. The teacher may also wish to have more questions and could develop them from the criteria previously identified.

Activity Four

A GRADE SIX PROBLEM-SOLVING ACTIVITY

Directions:

It is the purpose of this activity to involve the students with actual problem-solving in their physical environment. During the evaluating exercise of Activity Three, they should have identified a variety of improvement opportunities. Some of these could be approached and worked on using the format and sequence described on pages I-22 & 23. It should be noted that improvement activities can correct a problem, prevent a problem, or enhance an already desirable location.

Concepts To Be Developed:

- Human beings set up institutions to meet their needs effectively.
- Human beings develop and apply technology which uses natural components to produce human communities.
- Natural resources are natural components which are useful to man.
- People provide for their needs by working on the natural resources through an institutional system and a technological system to produce and maintain the human environment.
- Environmental problems are those conditions which affect the quality of life and result from the inefficient functioning of the human systems.

Field Activity: (sample problem-solving unit)

The students may carry out this problem-solving activity or, preferably, an activity developed by the teacher.

The following activity was developed by Helen Dempsey.

DISCOVERING AND DEVELOPING AN OUTDOOR SITE

for

"QUIET" RECREATION

BEHAVIORAL OBJECTIVES	ACTIVITIES	TEACHING AIDS
The student will be able to:		
1. State the need for a "quiet" recreation area on the school site.	1. Discussion of the types of recreation participated in by students and the different needs of the students. - Site survey to see if such places exist.	
2. Describe what makes a good "quiet" recreational area.	2. Discussion of what students enjoy doing for passive recreation. - Discuss need for opportunity for reading, for playing quiet games and for social "get-to-gethers." - Pupils write short paper on their ideas of good area for passive recreation.	
3. Locate several possible sites.	3. Take a survey trip around school site to see if any areas described in #2 exist. - Make overall map of school site. - Pinpoint on individual maps location of possible sites.	

4. Choose a site.	4. Exhibit maps. - Debate good and bad features of individual sites. - Class makes choice of preferred site.	4. Bulletin board.
5. Explore what equipment will be needed and its availability.	5. Class committee investigates and reports what will be needed. - Class committee finds channels for getting equipment.	5. School directory.
6. Devise a plan of action.	6. Appoint committees to plan to: a. select equipment b. receive and prepare equipment for placing c. place equipment.	
7. Carry out plan.	7. Committees carry out the work as set up in # 6.	7. Tables, benches, litter cans.
8. Determine how best to maintain the site.	8. Some students give talks to other classes on expected behavior on the site. - Students take regular time monitoring recess and noon periods. - Students take turns emptying litter cans.	
9. Make periodic reports to determine the success of the new "quiet" site.	9. Monitors keep records of approximate use of the site. - Students put information in graph form.	9. Graph paper.

Student's Name_____

Date_____

PreTest_____

PostTest_____

MAINE ENVIRONMENTAL EDUCATION PROJECT
Title III, ESEA, 306

GRADE SIX

PRE-POST TEST

SCORING

QUESTIONS

CONCEPTS

1. _____(6)

1. Characteristics of Natural Components (slide of region-aerial)

Place an X in the blank beside those natural components that would be available in the same amount in every community in a region such as that seen here.

___ land
___ water
___ air
___ plants
___ animals
___ energy (from the sun)

2. _____(1)

2. Interrelationships of Natural Components (slide of a rat)

The best solution to eliminating rats as pests is to: (circle the letter beside the best answer)

a. Remove litter and waste

b. Put out poison bait

c. Let loose an animal that kills and eats rats. (This is called biological control.)

d. Pass a law that puts a bounty on rats.

e. None of the above.

3. _____(3)

3. Changes of Natural Components
(slide of a natural feature in a community)

Circle T for TRUE or F for FALSE for each of the statements below.

Communities have changed in the following ways since the early settlers arrived several hundred years ago:

T F The kinds of sounds have changed, but the level of sound has not changed much.

T F The amount of water flowing through a community has likely changed.

T F The kinds of wildlife have likely changed, but the numbers have not.

4. _____(1)

4. Closed System
(slide of spaceship earth)

Circle the letter beside the best statement.

a. Communities create matter.

b. The planet creates matter.

c. The sun creates matter.

d. Clouds create matter.

e. None of the above.

5. _____(5)

5. Human Dependency on Nature
(slide of region - aerial view)

All of the following are found in your region. What must be present in order for people to survive? Circle the letter beside your answers.

a. Dumps
b. Roads
c. Land
d. Power Lines
e. Hospitals

6. _____(4)

6. Human Needs
(slide of a town street)

What do you see in this picture which meets the following needs?

Safety_____

Convenience_____

Beauty_____

Durability_____

7. ____(6)

7. Environmental Problems - Creating Useful and Harmful Conditions
(slide of region - aerial view)

Below are three columns. The CENTER column contains uses of a regional environment. The column on the LEFT contains a list of good results. The column on the RIGHT contains a list of harmful results. Match each use of the environment with its good results and with its harmful results. An example is given for you.

GOOD RESULTS	USES OF THE ENVIRONMENT	HARMFUL RESULTS
___Provides for easy movement in and out of the region	1. Airport	4 Inaccessible to many people
4 Meets needs for enjoyment and physical fitness	2. Sand & Gravel Pit	___Noise Pollution
___Convenient source of information	3. Highway Bill-Boards	___Dangerous if unattended
___Provides natural resources	4. Regional Park	___Block scenic views

8. ____(1)

8. Institutions to Meet Needs
(slide of a park)

As environmental problems such as sewage disposal and lack of parks in communities become more complicated and the solutions more expensive, the best way to treat these problems is: (circle the letter beside your answer)

a. Each person taking care of his own problem.

b. Each community taking care of its own problems.

c. Each family taking care of its own problems.

d. Groups of communities taking care of the problems.

9. ____(8)

9. Function of Human Systems

Man has institutions and technology which he uses to create his environment and products for his use. Check those things which are also needed, in addition to institutions and technology, for man to develop his environment.

___a. Libraries ___e. Wood

___b. Water ___f. Buildings

___c. Trucks ___g. Boats

___d. Land ___h. Tractors

10. _____(1) 10. Natural Ecosystem Stability (slide of moss on a rock)

Circle the letter beside the statement which is most correct.

a. Succession is a process describing how nature becomes stable.

b. Succession is a process describing how nature becomes unstable.

c. Succession is a process describing how trees grow.

d. Succession is a process describing how trees die.

e. None of the above.

FEELINGS

11. _____(5) 11. Toward Nature (slide of a forested area)

This area is just as important in a region as are places to work and live. Circle the number below that shows how you feel about this statement.

STRONGLY DISAGREE	DISAGREE	UNDECIDED	AGREE	STRONGLY AGREE
1	2	3	4	5

12. _____(5) 12. Toward Nature (slide of a marsh)

If a large amount of money and time can be saved by building a highway over this marsh, it should be done. Circle the number below that shows how you feel about this statement.

STRONGLY DISAGREE	DISAGREE	UNDECIDED	AGREE	STRONGLY AGREE
5	4	3	2	1

13. _____(10)* 13. Toward Self (slide of littered road)

You are put in charge of cleaning up the roads in your town. Put an X on each of the lines below over the number that best describes how you feel about your ability to do this.

COLD 1 2 3 4 5 6 7 8 9 10 HOT

WEAK 1 2 3 4 5 6 7 8 9 10 STRONG

LITTLE 1 2 3 4 5 6 7 8 9 10 BIG

14. _____(10)* 14. Toward Self
(slide of a billboard)

Your ecology club has chosen you to call the town manager about this ugly billboard in town and ask him how it can be changed. Place an X on each of the lines below over the number which best describes how you feel about your ability to do this.

COLD 1 2 3 4 5 6 7 8 9 10 HOT

WEAK 1 2 3 4 5 6 7 8 9 10 STRONG

LITTLE 1 2 3 4 5 6 7 8 9 10 BIG

15. _____(10)* 15. Toward Others
(slide of a planning board)

Planning boards should spend as much time and effort developing long-range plans as they should working with present problems. Place an X on each of the lines below over the number which best describes how you feel about this statement.

SAD 1 2 3 4 5 6 7 8 9 10 HAPPY

DARK 1 2 3 4 5 6 7 8 9 10 LIGHT

COLD 1 2 3 4 5 6 7 8 9 10 HOT

16. _____(5) 16. Toward Others
(slide of school playground)

Since your class helped to buy new equipment for the playground, you should have first choice using it. Circle the number which best shows how you feel about this.

STRONGLY DISAGREE	DISAGREE	UNDECIDED	AGREE	STRONGLY AGREE
5	4	3	2	1

SKILLS

17. _____(1)

17. Discovery-Inquiry
(slide of a school site)

Your class is going to investigate the school site to find out what Buildings, natural features and other things exist and where they are located. Circle the letter beside the statement which best describes how this should be done.

a. Walk around the school grounds and talk with the custodian.

b. Walk over the site and draw and label the buildings and natural features on a map.

c. Walk around the school grounds and write down the information in detailed notes.

d. None of the above.

18. _____(3)

18. Evaluation - Problem Identification
(slide of a school site)

A school site such as this can be developed to meet the three following general kinds of human needs. Fill in the blanks with another need that belongs to each of these groups.

PHYSICAL NEEDS	MENTAL NEEDS	SOCIAL NEEDS
1. Durability	1. Privacy	1. Play
2. _____	2. _____	2. _____

19. _____(3)

19. Problem Solving
(slide of a school site)

You are constructing a nature trail on your school site. What would you do first, second and third? Number the steps in order.

___Assign people to make a nature trail.

___List the characteristics of the area where the trail is to be built.

___Plot three possible alternative trails.

* Add the numbers of each scale after the statement and obtain the averages for the score.

MAINE ENVIRONMENTAL EDUCATION PROJECT
Title III, ESEA, 306

GRADE SIX

FEELINGS TOWARD NATURE

PreTest Unobtrusive Test Item

Directions:

Near the end of the testing period, place a pile of Wildlife Habitat Questionnaires near the door of the classroom. Explain that the Maine Environmental Education Project is conducting a survey of the interests of people regarding the protection of wildlife habitats in towns in the state. Those interested in completing the questionnaire should pick up a form at the end of class and return it the next day to the teacher.

(Count the number of forms returned to the teacher).

Post Test Unobtrusive Test Item

Directions:

Near the end of the testing period, place a pile of new Wildlife Habitat Questionnaires near the door of the classroom. Explain that the Maine Environmental Education Project would like additional information to complete its survey. Those interested may fill out this new questionnaire. Also explain that those who did not fill out the first questionnaire may still fill out this one. Return all forms the next day to the teacher.

(Count the number of forms returned to the teacher).

MAINE ENVIRONMENTAL EDUCATION PROJECT

Title III, ESEA, 306

WILDLIFE HABITAT QUESTIONNAIRE

Name_____

Address_____
street

_____
city state zip

1. Check below the kinds of habitat areas which you feel should be protected.

___wetlands ___deer yards ___swamps

___streams ___meadows ___beaver ponds

___small forests

2. Check below what you think should be done to better manage wildlife habitat areas.

___Survey habitats in towns.

___Provide funds to improve habitats.

___Contact residents who will help locate valuable habitat areas.

___Train people to manage habitat areas.

MAINE ENVIRONMENTAL EDUCATION PROJECT

Title III, ESEA, 306

WILDLIFE HABITAT QUESTIONNAIRE

Name_____

Address_____
street

_____
city state zip

1. Check below what you think should be done to help people know more about wildlife habitat areas.

___Have a public meeting with a wildlife specialist.

___Show a film at a public meeting.

___Take a field trip to visit an area.

___Have a short course in the school's adult education program.

2. Check below what you think students could do to help protect wildlife habitat areas.

___Plant shrubs on the school site.

___Take field trips to study areas.

___Have a poster contest.

___Write articles for the school newspaper.

SECTION III

OTHER HELPFUL INFORMATION

GENERAL CONSIDERATIONS FOR THE GRADE _ VEL FIELD TRIP

It is the purpose of the field trip to aid in the development of attitudes towards the environment and its associated problems by giving children concrete experiences in the outdoor environment. The focus of the trip will be on the environmental components, concepts, and associated problems in the study environment.

Prior to taking the trip, locate those things which can be perceived by the students and interpreted by the guide to bring out the necessary information. These could be pinpointed on a map along with the trip route. On the trip, itself, the students will be encouraged to identify additional areas of interest.

Concerning the development offeelings, the trip should provide opportunities for the guide to develop in the students an appreciation of the environment as they are encouraged to use their senses - see, touch, hear, smell, and taste. It is also important that each child feel that he is an important member of the expedition and can make a contribution to it. At the same time he must respect others on the trip and help them get as much out of it and enjoy it as much as possible.

The development of understandings should focus more specifically on the characteristics, changing nature of, and interrelationships between natural resources or elements. Also, man's dependence on the environment, how he utilizes it, and its associated problems should be brought out.

On the trip itself, the procedure should be somewhat as follows:

1) Students will be guided on a planned route with stops at selected areas. The tone of the trip, however, will be one of discovery, and the students will be encouraged to identify other areas.

2) At a stop, discussion and questioning will proceed about the natural resources involved and our aesthetic and physical uses of them. The students will be encouraged to react to things they like and don't like and to think about things they would like to see or wouldn't like to see. They will be encouraged to make value judgments and discuss them.

3) Before leaving the area, the students will be asked to think about what they might do to help solve or prevent problems they might have encountered or thought of.

Further information on conducting or leading a field trip follows in this guide.

TAKING SUCCESSFUL FIELD TRIPS

For education in the environment field trips are essential. The following is a listing of those prints which are considered to be important in taking successful field trips. They were taken from "Ways of Enhancing Field Trips - A Checklist of Considerations for Trail Leadership" compiled by Dr. William B. Stapp of The University of Michigan.

Considerations to be aware of before the hike:

1. See that information as to proper clothing is made known to children and parents:
   a) in case of rain,
   b) for temperature comfort,
   c) for comfortable movement.

2. Establish expectations as to trail rules:
   a) safety,
   b) courtesy to one another and to the leader.

3. Be sure to have things well planned; have the area and route scouted ahead of time; and have materials and aids ready.

4. Each hike should have:
   a) an orientation before the hike - trail rules, learning expectations, etc.
   b) the hike itself where "teachable moments" are utilized,
   c) a drawing together and sharing of discoveries, etc.

Considerations to be aware of early in the hike:

1. It is good to start the trip with a story, perhaps about an unusual object held in the hand of the leader. This tends to focus their attention through the leader to objects of interest early in the hike.

2. At the beginning of the hike some specific tasks of observation are good practice . . . for example, have them listen and see how many different birds they can hear; color they can see; odors they can smell, etc.

Considerations concerning the children specifically:

1. It is important to tap the information a group has "ready" for it: (a) helps locate their level of interest and ability and (b) helps to keep their interest and thinking right along with you and the topic at hand.

2. It is possible and often wise to give leadership and responsibility to help contain an energetic yet able child . . . use the child with special knowledge to good advantage.

3. It is always a good idea to give them some time to explore on their own, but be sure to give the exploration a specific enough objective to handle the discussion which should follow.

4. It is well to allow time to reflect on the potential that is there to stimulate our own creativity, and to wonder at the magnificence.

Considerations concerning the subject matter:

1. Keep to an objective and don't try to do too much at once.

2. Differentiate between what is a real distraction and what might be a new worthwhile focus of interest.

3. Remember that choice of words is extremely important with all ages and that complete sentences are essential. When strange or new words are involved, be sure the concept is clear.

Considerations concerning aids and techniques:

1. It always helps if the leader uses hands and eyes to direct attention . . . and some graphic or specific reference to an object, direction, size, range, shape . . . something in addition to the verbal description . . . or a word association with a specific word description.

2. For best attention, leaders should be encouraged to know and use the specific names of children and either look at the object of consideration with sincere interest and intent and/or at the children with good eye contact for directing thoughts and attention.

3. Any action seems to perk people up.

4. When discussing things pertaining to distance (both physical and chronological) it is well to be aware that these are difficult for children, and unless some special attempt is made to relate it (with history, to age of relatives or tree growth, for example) then the best use has not been made of the situation.

5. A change of pace is important: (a) in the pattern of presentation; (b) in the speed of moving along the trail; (c) in the depth of focus and the degree of attention required. Also, don't stay too long in one spot and lose the children's interest or too short a time causing superficiality.

Considerations of teaching-learning principles:

1. Learning with contrasts is particularly effective . . . as exemplified by showing what appeared to be an empty uninteresting field, and then looking closely for "wealth" there.

2. Repetition is recommended.

3. Use as much multi-sensory awareness as possible during the hike.

4. It is before an object has been named that you can encourage them to wonder, estimate, etc.

5. Try to make stops at times when enthusiasm and interest are high - leave while there is still anticipation to invite return.

6. Be aware of a good balance between questions asked and information given.

Considerations concerning "physical arrangements" of the children

Try to eliminate any unnecessary distractions - terrain, sun, etc.

Considerations concerning the leader:

1. Relating one's own personal experience (within reason and providing it can be related in an interesting manner) often helps to enhance the interest and understanding.

2. The leader should participate in the searching and investigating he assigns the group. His enthusiasm and attention to such things is supportive of his talking.

3. The leader's enthusiasm, curiosity, wonder, confidence, etc. is catching.

4. Be as sure as possible of your subject matter, and keep systematically increasing your own knowledge by as many means as possible.

5. A light sense of humor is appreciated by any age group . . . it is probably one of the more subtle yet effective parts of any kind of leadership.

6. When you are going through a thought process or figuring some things out, do it out loud in a way that the children can learn or share.

7. If you don't know something, be sure to say so.

8. Involve every child in the hike.

9. Hopefully, the leader's interest is genuine . . . interest in children (of all ages) . . . the subject matter in consideration . . . and in the education process. If one lacks interest in any of the three above, perhaps more inquiry into them would develop into a sincere interest.

10. Plan hour route, education objectives, and teaching progressions, but be patient in getting these achieved through the discoveries of the children.

11. At one time or another on the hike you might consider involving the children in: (a) contemplation, (b) relating specific things to parallels in the human community, (c) some close scrutiny.

ENVIRONMENTAL EVALUATION AND IDENTIFICATION OF IMPROVEMENT OPPORTUNITIES

EVALUATION OF THE NATURAL ENVIRONMENT (composed of the components land, water, air, plants, animals, energy)

1. Do characteristics of location, quantity, quality, and diversity of components contribute to the health and proper functioning of the natural environment?

   Suggested Component Evaluative Questions

   a. Are fertile SOILS available in sufficient amounts to provide for a diversity of plants and animals?

   b. Is WATER available in both quantity and quality to provide for a diversity of plants and animals?

   c. Is AIR of a quality which is not detrimental to plants and animals?

   d. Is a diversity of producer PLANTS and transformers-decomposers - present in balanced populations and in a healthy condition?

   e. Is a diversity of ANIMALS - consumers, transformers, decomposers - present in balanced

populations and in a healthy condition?

f. Is ENERGY present in amount and form - heat, light, sound, chemical, radioactive - which contributes to the health of the environment?

2. Do the links or interrelationships of a component with other components provide for efficient use and cycling of materials and the efficient use of the sun's energy?

Suggested Component Evaluative Questions

a. Are SOILS supporting and providing nutrients to plants, holding water, being aerated and providing home and food for animals?

b. Is WATER contributing to the productivity of soils, moderating temperature, providing atmospheric moisture, and contributing to the needs of plants and animals?

c. Is AIR and associated conditions contributing to the productivity of soils, releasing and aerating water, moderating temperature, allowing the passage of sunlight, and constributing to the needs of plants and animals?

d. Are PLANTS holding soil and providing for the cycling of elements, holding and utilizing water, contributing to air quality and the microclimate, providing for the food and cover needs of a diversity of animals, and providing for the efficient utilization of the sun's energy?

e. Are ANIMALS providing for the cycling and return of nutrients to the soil and improving the air and water holding capacity of the soil, contributing to the quantity and quality of water, and meeting the needs of plants (pollination, etc.)?

f. Is ENERGY in both amount and form contributing to the stability and quality of soil, water, air, and providing for the needs of plants and animals?

3. Do changes which are occurring show that the component is contributing to the stability of the natural environment?

Suggested Component Evaluative Questions

a. Is SOIL erosion being prevented and the amount and fertility of the soil increasing?

b. Is WATER being distributed and replenished in a normal manner and are its chemical and physical characteristics contributing to the health and quality of the environment?

c. Is AIR, its movement, temperature, and quality, contributing to the health and quality of the environment?

d. Are PLANTS increasing in diversity of species, maintaining healthy balanced populations, utilizing energy efficiently, being recycled and transforming-decomposing matter (normal succession is occurring)?

e. Are ANIMALS increasing in diversity of species, maintaining helathy balanced populations, being recycled and transforming-decomposing matter?

f. Are normal sound and temperature levels being maintained and is sunlight energy available and being increasingly utilized efficiently?

EVALUATION OF THE MAN-MADE ENVIRONMENT

1. Does the man-made component or feature affect the characteristics, interrelationships, and changes outlined above in such a way that it contributes to the health and long-lastingness of the natural environment?

2. Does the man-made component enhance human physical, psychological and social needs? Man-made components include: production areas, human settlement areas, open-space areas, transportation and circulation areas, recreation areas, and community service and utility areas. In addition to these areas, the design features of each area may also be evaluated. These include:

   Natural features

      Areas left in a relatively natural condition

   Man-made features

      Surface alterations
      Drainage and water controls
      Plantings
      Buildings and structures
      Site furnishings
      Communicative devices
      Circulation facilities
      Services and utilities

   Physical Needs

   Is the environmental feature or component functional and does it possess characteristics of:

   1. convenience and efficiency,
   2. safety and health,
   3. durability or lastingness?

   Psychological Needs

   Is the environmental feature or component and its effects pleasurable to the senses, for example, is it aesthetically pleasing, is there sufficient diversity, etc.

Social Needs

Does the environmental feature or component assist people to exist in harmony together, to interact, and to gain a measure of individual and group recognition?

Criteria to assist in answering the above evaluative questions may be derived by considering the following:

1. Existing and desired regulations and standards (safety standards, zoning requirements, etc.)
2. Existing and desired objectives of the area or development (to provide for ease of movement, etc.)
3. Unique characteristics of the area of development (one of a kind, historic significance, etc.)
4. Characteristics of those using the area or development (age, health, etc.)
5. Principles of design (unity, harmony, balance, dominance, repetition, contrast)

Kinds of learning opportunities which may be identified from the study and evaluation of the total environment

1. Preventing something detrimental from occurring.
2. Correcting an existing detrimental condition.
3. Adding something which will enhance the function and quality of the environment.

ENVIRONMENTAL PROBLEM-SOLVING AND IMPROVEMENT ACTIVITIES

Problem-solving steps -

1. Inquiring - becoming informed about the problem through investigation.
2. Determining alternative solutions, plans, or designs for the problem.
3. Evaluating the solutions and selecting the best one for the situation.
4. Developing a plan of action.
5. Implementing the plan of action.
6. Evaluating the process and results.

Suggested environmental improvement activities for student involvement -

1. Preventing soil erosion and improving eroded areas.
2. Controlling water quantity and quality.
3. Controlling air pollution.
4. Preventing and controlling plant diseases.
5. Improving wildlife habitats.
6. Rehabilitating mining areas, gravel pits.
7. Preserving historic areas.
8. Acquiring and enhancing open space.
9. Developing pathways, etc.
10. Developing recreational areas.
11. Determining multiple uses of power transmission rights-of-way.
12. Developing drainage controls.
13. Managing litter and solid waste.
14. Improving water quality.
15. Controlling pests.
16. Maintaining urban trees.